

American Cinematographer

International Journal of Motion Picture Photography and Production Techniques

SEPTEMBER 1979/\$1.50



Film 79

IN LONDON



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American Cinematographer

International Journal of Motion Picture Photography and Production Techniques

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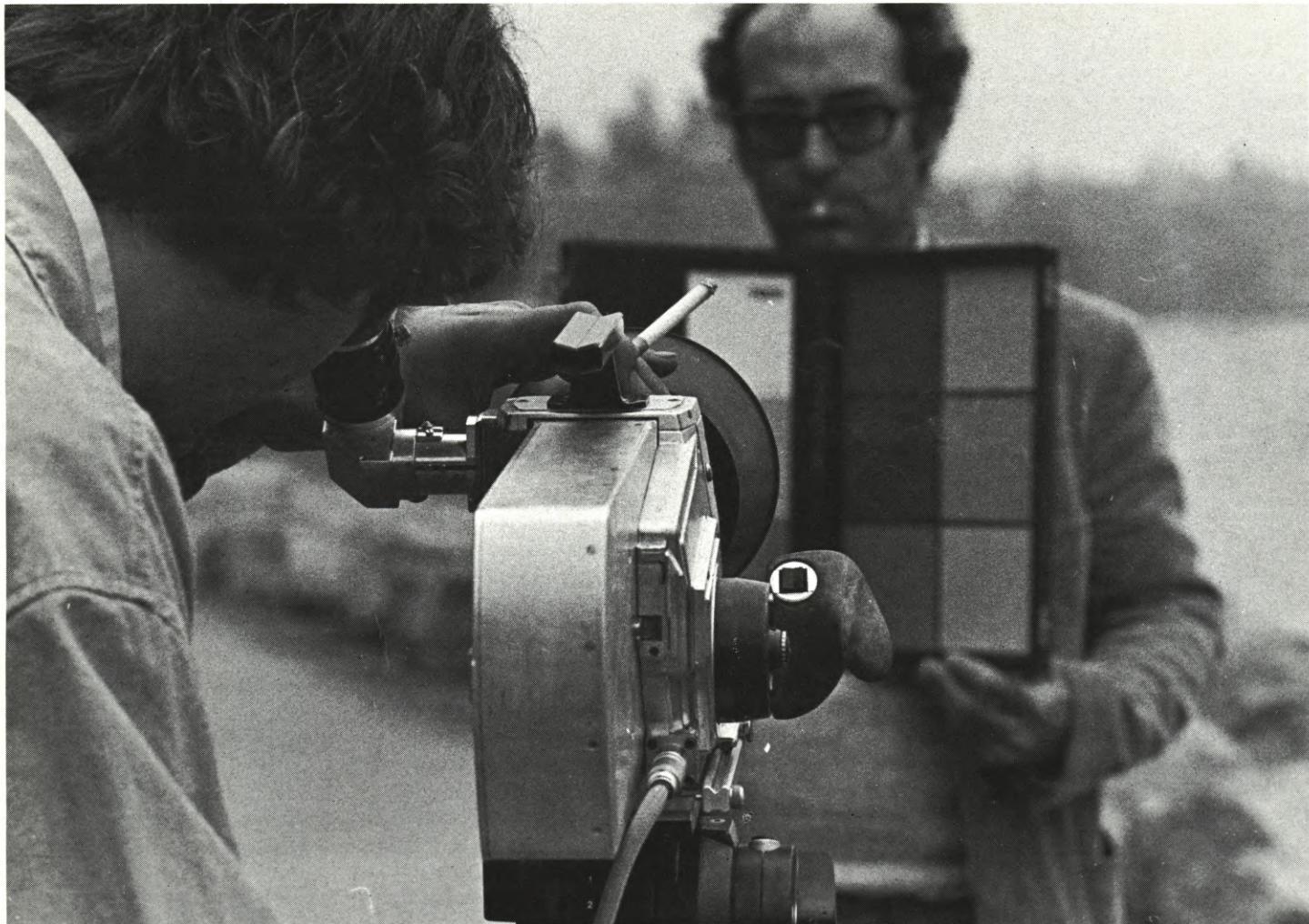
860 The Bookshelf

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ON THE COVER: A familiar scene that unmistakably spells "LONDON": "Big Ben", the Houses of Parliament, Westminster Bridge and a classic double-decker bus—all symbols of the stately city that played host to the FILM 79 International Technical Conference and Exhibition, held at the Royal Lancaster Hotel, July 2-6, 1979. Cover design by HERB A. LIGHTMAN. Posterization by WARNER COLOR LAB.

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AATON 35 mm



A.M. Mieville

Aaton makes J.-L. Godard a 35 mm camera. Ultimate steadiness

Two years ago, the well known film director, J.-L. Godard, commissioned Aäton to make a 35 mm camera. He wanted to combine the advantages of the quantity of information contained in a 35 mm film image, and the ease of handling and unobtrusiveness of super 8 cameras. The first prototype has been in use since April 1979, and the results are more than encouraging.

The Aäton 8-35 is **handheld**, and has **instant magazines**; until now, the only 35 mm camera with instant mags has been the Cameflex (1946), which is extremely noisy.

The noise level of the 8-35 is 33 dB. Without any sound absorbing material, the prototype runs at 35 dB; two decibels less is realistic with damping. 33 dB appears quite acceptable in light of the fact that a non-optimum self-blipped 16 mm camera can run in that area.

The **steadiness** is excellent; it is ensured by the same **claw movement system** (U.S. patent 3806016) that has made a name for the Aäton 16 mm LTR. The pulldown of the stroke is absolutely linear, with the dead point in the film plane. Willy Lubtchansky, J.-L. Godard's cameraman, contends that the 8-35's steadiness is comparable to that of a Mitchell. On double exposure tests, no visible sign of any movement whatsoever can be observed.

An original feature: a second electric motor in the camera body drives the

60 m and 120 m magazines through an independant drive clutch.

The 8-35 is **small**, and **light**; it weighs in at around 5 kg, with 60 m mag — slightly less than the Aäton LTR 16 mm camera.

This camera is meant to be a companion to the Panavision or Arri 35 BL: it is easy to handle, unobtrusive, mobile. For certain films, it may even be the only camera; with a soft blimp, the sound level could be made acceptable for indoor work.

The first pre-series of some twenty cameras will be launched early in 1980. Many well-known cameramen and directors have already spoken for theirs' by putting down 50 % payment (in the order of \$ 10,000 to 15,000); delivery will be early 1981.

& 16 mm

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The exciting future developments of Aäton's innovations in 35 mm should not, however, overshadow its proven achievements in the 16 mm field. The Aäton LTR has now shown itself to be a reliable instrument, with over 400 sold in Europe in the last few years.

Below, Dedo Weigert, « shooting » a lion on location in Java Indonesia, with camera number 84. One of the early cameras to come out of Aäton, Dedo also took it with him for extensive filming in the jungles of the Amazon; with up to 100 % humidity, and condensation dripping in the lens, he shot 60,000

feet without so much as a single scratch, or any other problem.

Neither the very **low noise level** of the LTR (average : 26 dB) nor its excellent **image steadiness and sharpness** are compromised to make it a rugged and reliable tool for work in expedition type settings. The Aäton LTR is at home in the **icy chill of Lapland***; it has proven itself problem free in the **muggy humidity** of the African jungle (see A.C. Aug. '79). And in the **torrid dust storms** of the Iranian desert too, the Aäton 16 mm camera has been shown to be robust and

dependable (A.C. June '77). It is established as a camera that can brave the wilds with ease, and bring it all back on film.

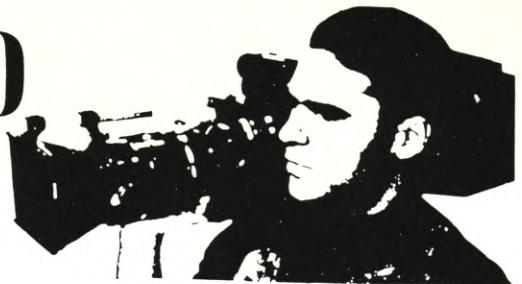
The LTR magazine is **simple to load** : with **gloves in cold climes**, or with **hot and sticky hands** in the tropics. And the aperture gate can be checked and cleaned effortlessly with the magazine off the camera.

The Aäton LTR is now available in the U.S.. Rapid maintenance and turn-around are ensured through Aäton's New York operation.

* Remember, when working in sub-zero temperatures, it is best to *leave the camera in the cold at all times*, and to lace it up in the cold as well.



CINEMA WORKSHOP



By ANTON WILSON

AUTO WHITE BALANCE

Every cinematographer is familiar with color temperature and the fact that every film made is balanced for one specific color temperature only, usually 3200°K (tungsten) or 5600°K (daylight). It is also common knowledge that if lighting conditions do not match one of these two standards, color correcting or conversion filters must be employed to ensure proper color rendition. Murphy's law seems to hit hardest in this area as every location seems to have a mixture of window daylight and overhead fluorescent, while the lighting kit is always tungsten. Despite the best color temperature meters, color compensating filters for the camera, and dichroics or gels for the lights, perfect color balance is difficult to achieve and there is still chance of a horse of a different color. Even outdoor locations employing "daylight" film or filters run the risk of gross color errors, as outdoor conditions can range from 3000°K to more than 20,000°K. Of course, most labs can color correct to a certain extent. However, they still request that the cinematographer balance as best he can on location. At the very least, color balancing has always been a necessary nuisance for the cinematographer.

Now, imagine a new film stock that will automatically adjust its color temperature rating to perfectly match the prevailing lighting conditions of each shot. Whether the illumination be candlelight, sunset, open shade, or a mixture of daylight, tungsten and fluorescent, the results would always be spot-on, without the necessity of external filters or gels on the lights. This may seem like a far-out fantasy, yet virtually every professional ENG/EFP video camera does just that.

The tiny button is usually labeled "auto white balance" and is inconspicuously grouped with the several other buttons and switches found externally on all video cameras. The process takes anywhere from 5 seconds down to 1/2-second on the newest cameras. The principle behind this miracle is really quite simple and a short explanation of the auto white balance process is sure to be a thrilling revelation.

Color is determined by the specific wave length or frequency of light. There are myriad colors in the rainbow, ranging

on a continuum from infra-reds through ultra-violets. Yet, we as human beings determine color only by the relative amounts of reds, blues and greens. The eye is thought to be made up of three basic sensors, which respond to blues, reds and greens respectively. Even though a particular object or surface may be emitting or reflecting many different frequencies, the eye just registers the relative strength of these frequencies in groupings of reds, blues and greens. The brain then "averages" these three signals and comes up with a "color" for the object. It should be realized that in many cases this "color" that the brain comes up with may not have any resemblance to the actual "colors" of the object according to frequencies of light.

The important point is that the ultimate color, as perceived by the brain, is created by merely registering the red, blue and green content of the image.

Color film makes use of this fact and is constructed of three layers, one each to register reds, blues and greens—just like the human eye. (Of course this terrestrial film may not provide acceptable color rendition for other cosmic creatures. However, that is a problem Kodak will have to face when the situation arises.) The color temperature rating of a film stock merely reflects the relative sensitivities of the three layers. For example, "daylight" balanced films have color

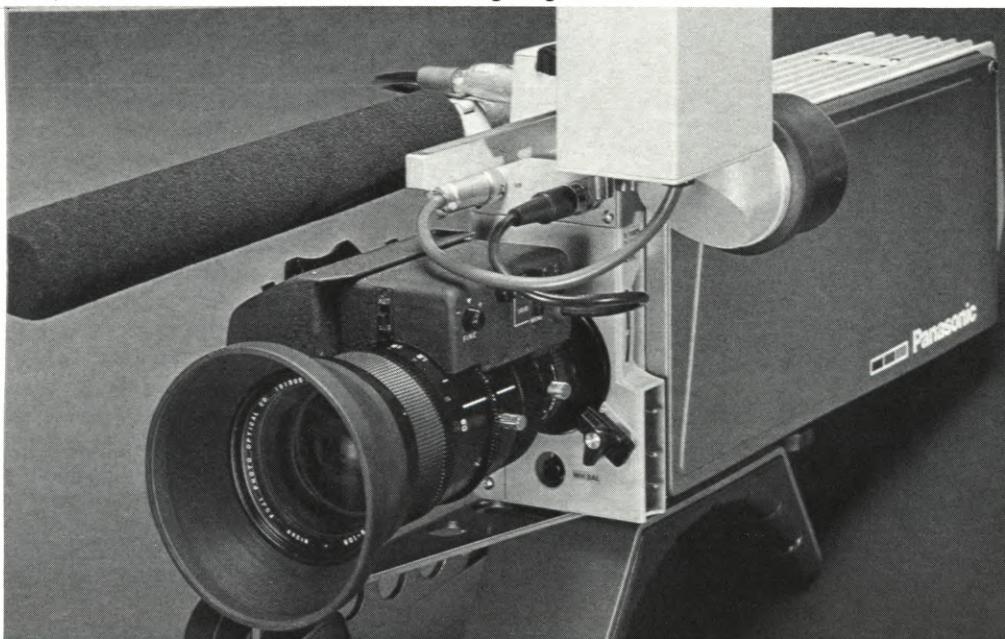
layers of approximately equal sensitivity, due to the fact that "daylight" is composed of relatively equal amounts of red, blue and green. Tungsten balanced film, on the other hand, is designed with a more highly sensitive blue layer relative to the red layer to compensate for the fact that tungsten light is weak in blue wavelengths. So color temperature ratings describe the relative sensitivities of the three color layers.

As we now know, the professional color video camera operates on the same principle as color film employing three light sensitive tubes, one each for reds, blues and greens. Because the output of these tubes is an electrical signal, the color temperature rating of the video camera can be made to *any* value by merely adjusting the relative gain or "volume" of these three signals. Thus, if the illumination is weak in the blues (as is a tungsten light source), the signal from the blue tube can be turned up. Now comes the amazing auto white circuit.

The video camera is merely pointed at any white surface. A plain white piece of paper is usually sufficient. The auto white button is pressed. Inside, the camera knows that "white" means exactly equal amounts of red, blue and green. So, while holding the gain of the green tube constant, the camera automatically adjusts the gain of the outputs from the

Continued on Page 920

The black button located on the front of this ENG camera, just below the lens, activates the Auto White Balance circuit. By pointing the camera at a pure white object and pressing this button, the camera automatically adjusts the red and blue gain to create perfect color balance, even under the most unusual mixture of lighting.



THE BASIC CAMERA

It's true you can find more sophisticated 16mm cameras than the Bell & Howell Model 70 Filmo. But there's no question that the rugged and reliable Filmo can perform with equal efficiency many of the jobs for which those sophisticated and expensive cameras are used. Make no mistake, the Filmo is a professional camera in every sense of the word. In fact, more than 50,000 have been in use throughout the world since the camera was first introduced. The Filmo gives you quality pictures of about anything



you might choose to film, from news events to documentaries, athletic contests to industrials, medical films to stock footage. It is a compact, versatile, hand-held 16mm camera and features a three-lens turret that can be fitted with a combination of "C" mount lenses. With the Filmo's convenient ratchet-wound spring motor, you can shoot at any one of seven speeds — 8, 12, 16, 24, 32, 48 or 64 fps. And, you can increase the normal 100-foot film capacity to 400 feet with the addition of an external magazine and motor drive. Brand new Filmos, accessories, parts and servicing are now available from AGE Inc. and through our worldwide dealer network. Call or write today for additional information on Filmo 70-DR and 70-HR cameras and available optional accessories.

Filmo

Model 70 Design
16mm Camera

Filmo 70-DR Camera
is illustrated with set
of Angenieux 10mm,
25mm and 75mm
lenses with
companion
viewfinder
objectives.



**It's rugged.
It's efficient.
It's professional.**

The Filmo 70 Design Camera is available in two models. The basic camera, the Model 70-DR, has a 100-foot 16mm film capacity, ratchet-wound spring motor, seven speeds (8, 12, 16, 24, 32, 48 and 64 fps) and a three-lens turret. The Model 70-HR is adapted for an external 400-foot magazine and motor to film long scenes without interruption. Seven filming speeds, Veeder footage indicator and shutter stabilizer are included. Magazine and motor are extra.

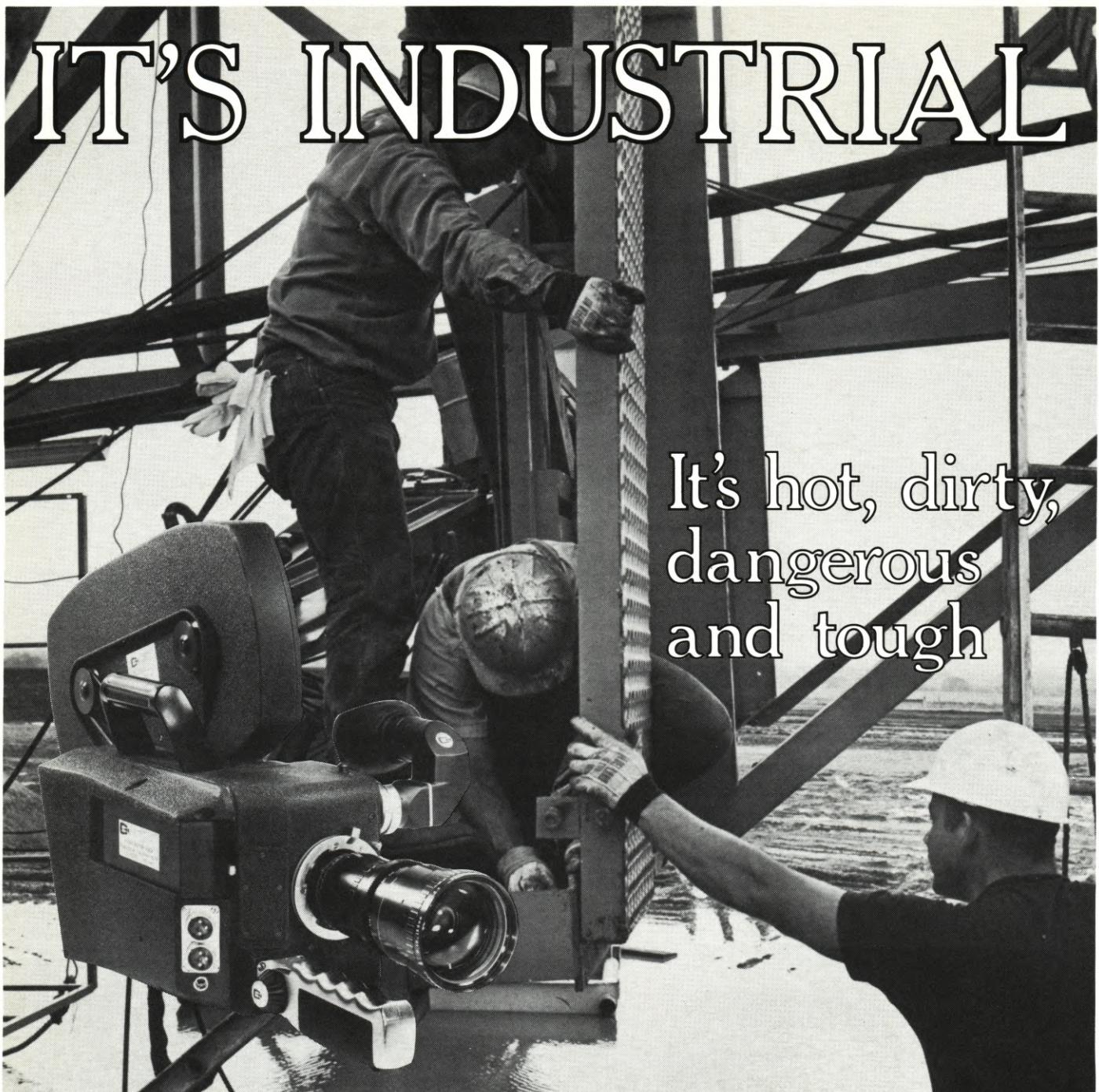
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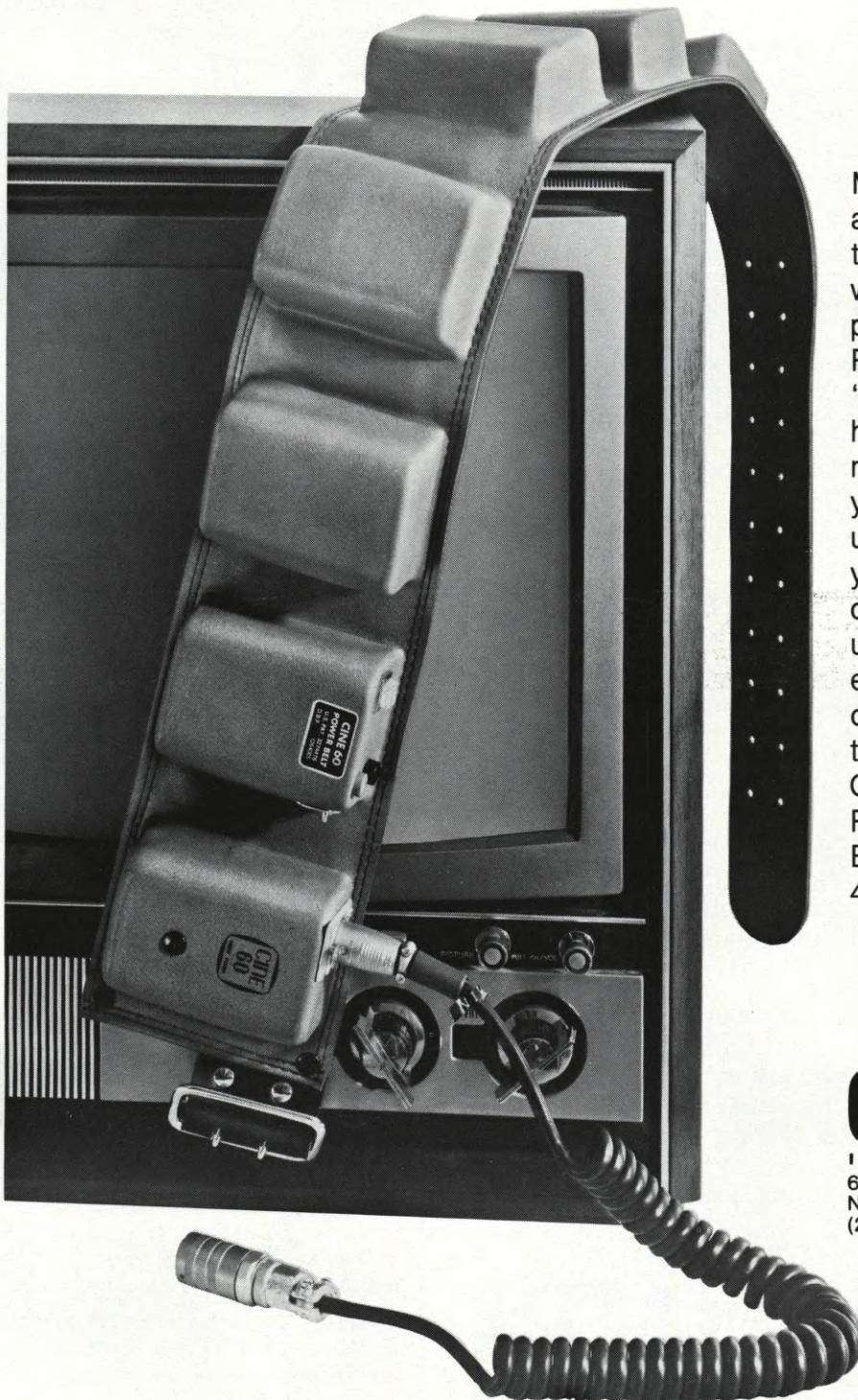
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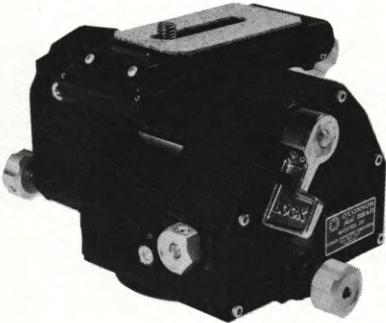
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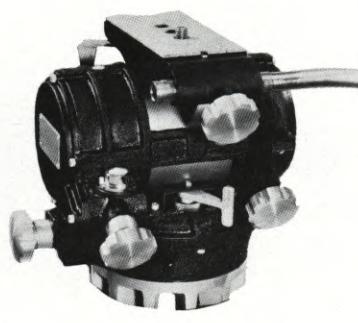
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THE BOOKSHELF

By GEORGE L. GEORGE
NAMES ON THE SCREEN

Three new Reference and Resource Guides have been added by G.K. Hall & Co. to their well established series: CHARLIE CHAPLIN by Timothy J. Lyons (\$30), AKIRA KUROSAWA by Patricia Erens (\$15) and LINDSAY ANDERSON by Charles L.P. Sipet (\$18). Each volume includes a biography, a critique of achievements, an exegetical filmography and an annotated guide to writings.

Yakima Canutt has written (with Oliver Drake) a zestful book of reminiscences, STUNT MAN. His lengthy career as rodeo rider, movie stunt man and director of action film sequences—notably the chariot race in *Ben Hur*—started during the silent era. Now 83, Canutt recaps his most spectacular roles and provides an exciting behind-the-scenes look at filmmaking (Walker \$14.95).

The autobiography of CBS founder and top executive William S. Paley, AS IT HAPPENED, is written in a generally candid, low profile style, letting triumphs and setbacks in a remarkable career speak for themselves. Only in a few instances—the blacklist and Watergate-related matters—does he discernibly depart from the openness that marks his fascinating memoir (Doubleday \$14.95).

Nunnally Johnson, who made a brilliant career as film writer-producer-director, is memorialized in FLASHBACK by his daughter Nora Johnson, a novelist in her own right. Her insightful and nuanced portrait depicts a mercurial and often overbearing personality in a nostalgic evocation of Hollywood during its heyday (Doubleday \$11.95).

An engaging autobiography by Ralph Bellamy, WHEN THE SMOKE HIT THE FAN, follows the busy career of the consummate actor. Whether working on stage, in films or on television, Bellamy enjoyed a variety of experiences that he relates with wit and a sharp eye for detail (Doubleday \$10.95).

★ ★ ★

MIXED MEDIA

The steady climb to leadership that the American Broadcasting Company has demonstrated in the last two decades is described in INSIDE ABC by former V-P Sterling "Red" Quinlan. Executive power struggles, mergers, take-over attempts, financial maneuvers make for a fascinating casebook history of big business be-

havior (Hastings House \$12.95).

Otto Kleppner's classical work, *ADVERTISING PROCEDURES*, now in its 7th edition, is a comprehensive textbook of publicity techniques in television and other media. Creating and managing advertising are expertly covered, and a concise history is included (Prentice-Hall \$17.95).

A massive and minutely detailed guide, *THE COMPLETE DIRECTORY TO PRIME TIME NETWORK TV SHOWS 1946-PRESENT*, compiled by Tim Brooks and Earle Marsh, presents full data on some 2500 programs, including cast, plot synopsis, and broadcast history (Ballantine \$19.95/9.95).

Edited by Horace Newcomb, *TELEVISION: THE CRITICAL VIEW* offers a broad outlook on the medium as seen by 39 experts. It assesses and interprets specific program types, analyzes their cultural meaning, and defines television in its own terms (Oxford U. Press \$5.95).

Two British psychologists, H.J. Eysenck and D.B.K. Nias, make in *SEX, VIOLENCE AND THE MEDIA* a reasonable and objective assessment of the influence that film, television and the print media exercises on viewing and reading audiences (St. Martin's Press \$10.95).

In *ENTERTAINMENT: A CROSS-CULTURAL EXAMINATION*, the various roles of entertainment—communication, social and political influence, marketing function—are knowledgeably discussed by 26 scholars, under the editorship of Heinz-Dietrich Fischer and Stefan Reinhard Melnik (Hastings House \$18.50/9.50).

Comedian Steve Martin assembles 50 of his routines in *CRUEL SHOES*, a sampler of his crazy humor, sharp satire and occasionally appalling bad taste (Putnam \$6.95). Another form of humor—the involuntary one—is surveyed in *BLOOPER TUBE*, a humorous collection of occasional verbal lapses collected by Kermit Schafer (Crown/Harmony \$8.95/5.95).

Glenhall Taylor's *BEFORE TELEVISION: THE RADIO YEARS* recalls three decades of radio as entertainment, an informative and diverting survey of once favorite performers and programs (Barnes \$12). In *RADIO COMEDY*, Arthur Frank Wertheim offers a choice sampling from scripts aired by leading comedians, acquainting today's audiences with the distinctive humor of what was then strictly family fare (Oxford \$12.95). ■

U. Press \$18.95).

Monty Python's Flying Circus television shows, whose British zaniness found here a highly responsive chord, are perpetrated in two hilarious books: *RIPPING YARNS*, where Michael Palin and Terry Jones collect six of their most outrageously absurd scripts (Pantheon \$5.95), and *ANIMATIONS OF MORTALITY*, where Terry Gilliam reprises many of his wild and often macabre animated sequences (Atheneum \$7.95).

★ ★ ★

OF MANY THINGS

The stubborn and eventually winning fight by a black woman, Jessie Maple, to join New York's cameramen's local and practice her craft is told in her stirring book, *HOW TO BECOME A UNION CAMERAWOMAN FILM/VIDEOTAPE*. Her advice to other women with similar ambitions is both inspiring and practical (LJ Films, 1270 Fifth Ave., NYC 10029; \$4.95).

Eastman Kodak has issued a sturdy and serviceable pocket-size manual, *CINEMATOGRAPHER'S FIELD GUIDE*. It carries concise and specific data in sections on Film and Filters, Usage Hints, Formats and Packaging, and Ordering Raw Stock. Each offers technical and practical information described in brief and clearly stated terms, complete with tables of specifications and other pertinent facts (Booklet H-2, \$3.95).

Similarities and differences between cinema and literature are examined in *STORIES INTO FILM*, where editors William Kittredge and Steven M. Krauzer have assembled six novellas that became successful movies, among them *Blow-Up*, *The Rear Window*, *The Hustler* and *The Man Who Shot Liberty Valance* (Harper & Row \$5.95).

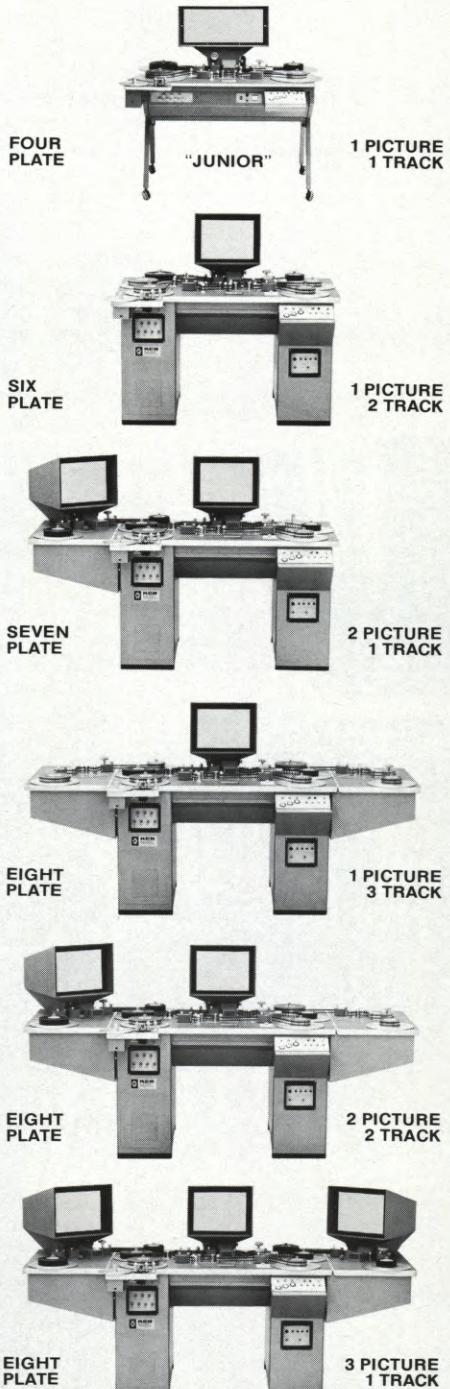
A critical and historic evaluation of the mass communication impact of film, television, radio and other media is presented in Vol. I of *HANDBOOK OF AMERICAN POPULAR CULTURE*. This scholarly study by academic specialists, edited by M. Thomas Inge, includes bibliographical data and a description of existing research centers (Greenwood \$25).

In *DECIDING WHAT'S NEWS*, sociologist Herbert J. Gans compares the handling of the news respectively by NBC, CBS, *Time* and *Newsweek*. His penetrating survey persuasively delineates the values, objectives, and methods of news reporting (Pantheon \$12.95). ■

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Showcase**

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Theatres

The Program:

The Short Film Showcase is a program of the National Endowment for the Arts and is administered by the Foundation for Independent Video and Film, Inc. (FIVF) to: create a wider audience for the work of independent filmmakers by exhibiting quality short films in commercial theatres and by providing technical, marketing and promotional services for those films sponsored by the Showcase.

All films submitted will be judged by Screening Committees composed of qualified professionals invited by the Arts Endowment. Up to ten (10) films will be chosen by the Committees for inclusion in the Showcase on the basis of the film's creative and technical excellence and suitability for exhibition to general audiences with feature films in U.S. theatres. Each filmmaker whose work is selected by the Final Screening Committee will receive an honorarium of \$2,500. and will supervise the 35mm blow-up of his or her film. The Arts Endowment will use its best efforts to attempt to place selected films into 35mm distribution but cannot guarantee

when or if such films will actually be used for free circulation to commercial theatres through the Short Film Showcase.

Entry Qualifications:

Any completed 16mm or 35mm composite print by a U.S. Citizen or Permanent Resident that is:
1) *Eight (8) minutes or under total running time (including titles and end credits)* and
2) will qualify for an MPAA rating of G or PG
3) has not already been accepted for 35 mm theatrical distribution in the U.S. and for which the artist owns or controls the U.S. theatrical rights and has cleared all performance rights.

Only One (1) Film May Be Submitted Per Entrant

Entry Instructions:

Each film submitted for entry **MUST** be:

- a) mounted on a reel
- b) shipped in a strapped regulation hardboard film case or plastic shipping case with corner clamps
- c) marked with film title and name of filmmaker on reel, leader and shipping case
- d) sent *prepaid and insured* (by

entrant) and must contain a **RETURN MAILING LABEL** with **POSTAGE AFFIXED** to cover mailing costs plus insurance (specify class of mail desired) from New York.

No Improperly Packaged Films Will Be Accepted

All films are submitted at owners risk. Receipt of films will **ONLY** be acknowledged by entrant sending either U.S. Postal Form #3811 (Return Receipt) (if insured or registered en route to New York), or by enclosing a self-addressed stamped envelope or card.

Entry Address:

Send films to:
Short Film Showcase c/o FIVF
99 Prince Street—2nd floor
New York, NY 10012

Entry Deadline:

All films must be delivered to FIVF no later than November 1, 1979.

Notification:

Showcase winners will be notified and all other films will be returned by February 28, 1980.

Entry Form: (Enclose With Film)

I have read and accept the above conditions and state that I am the principal filmmaker for the film entered in my name, that I have all rights of publication to this film and that the content of the film does not infringe upon the rights of anyone.

(Signature)

Print clearly or type:

Name: _____

Address: _____

Phone: () _____

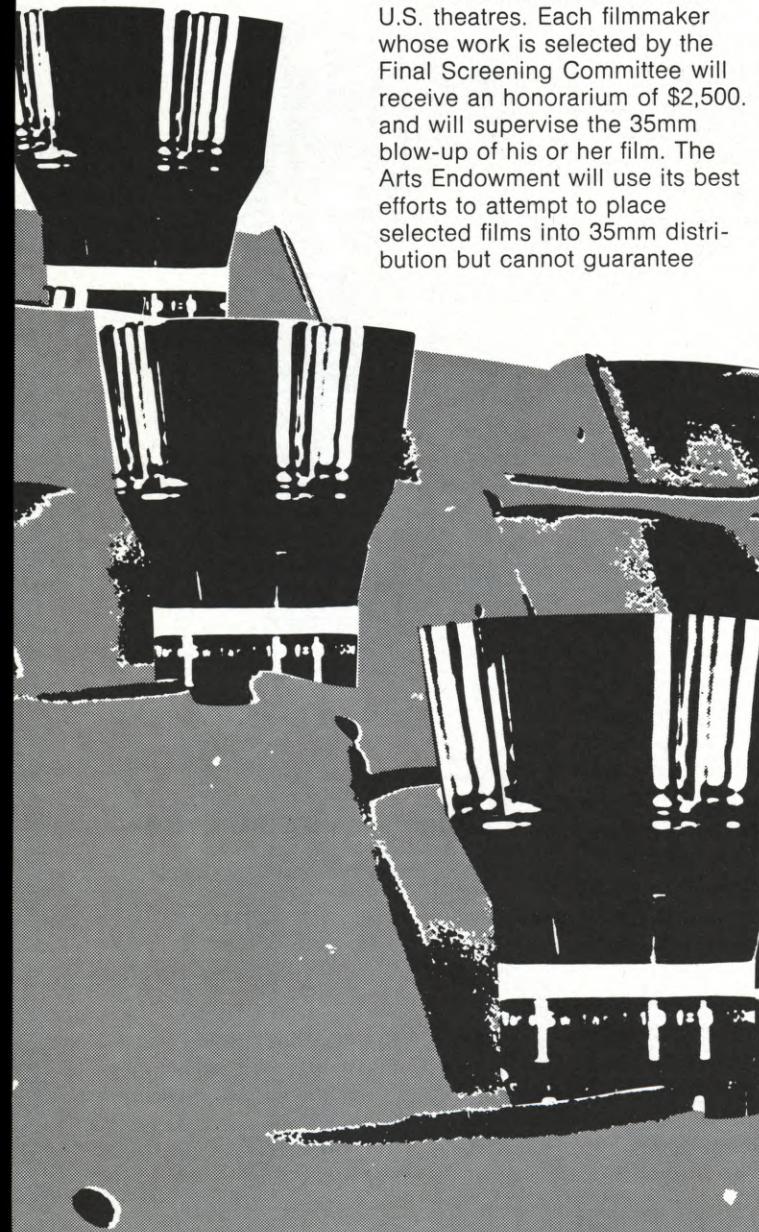
Title of film: _____

Running Time: _____ Color _____ B/W _____

Date film was completed: _____

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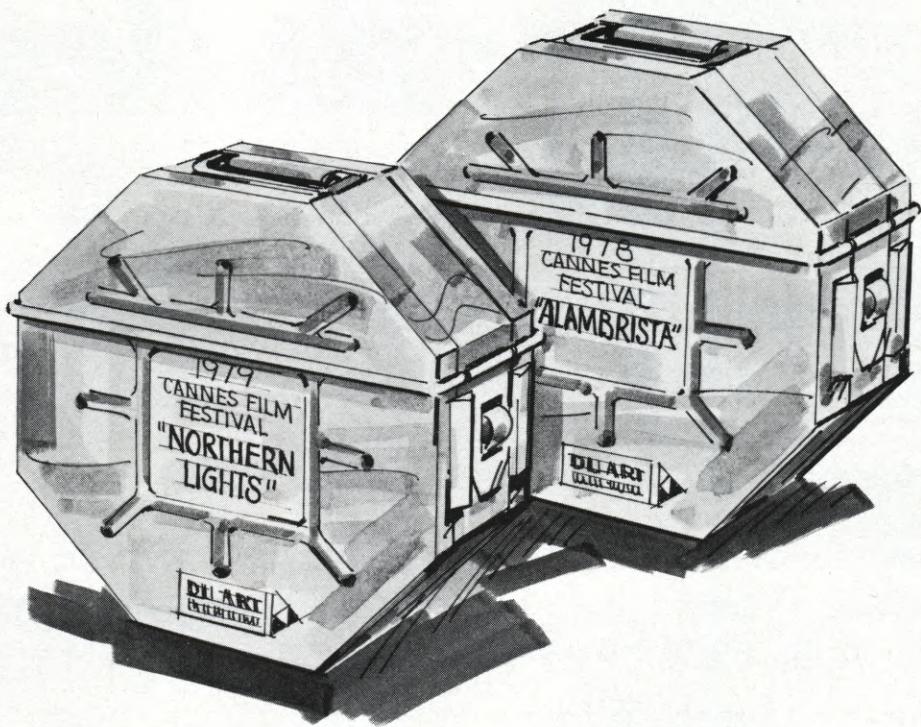


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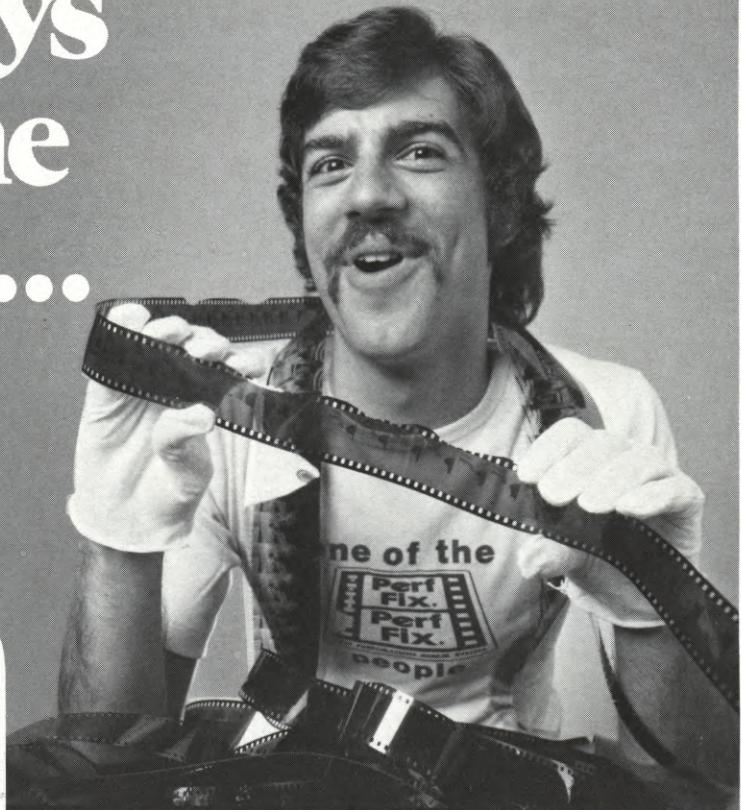
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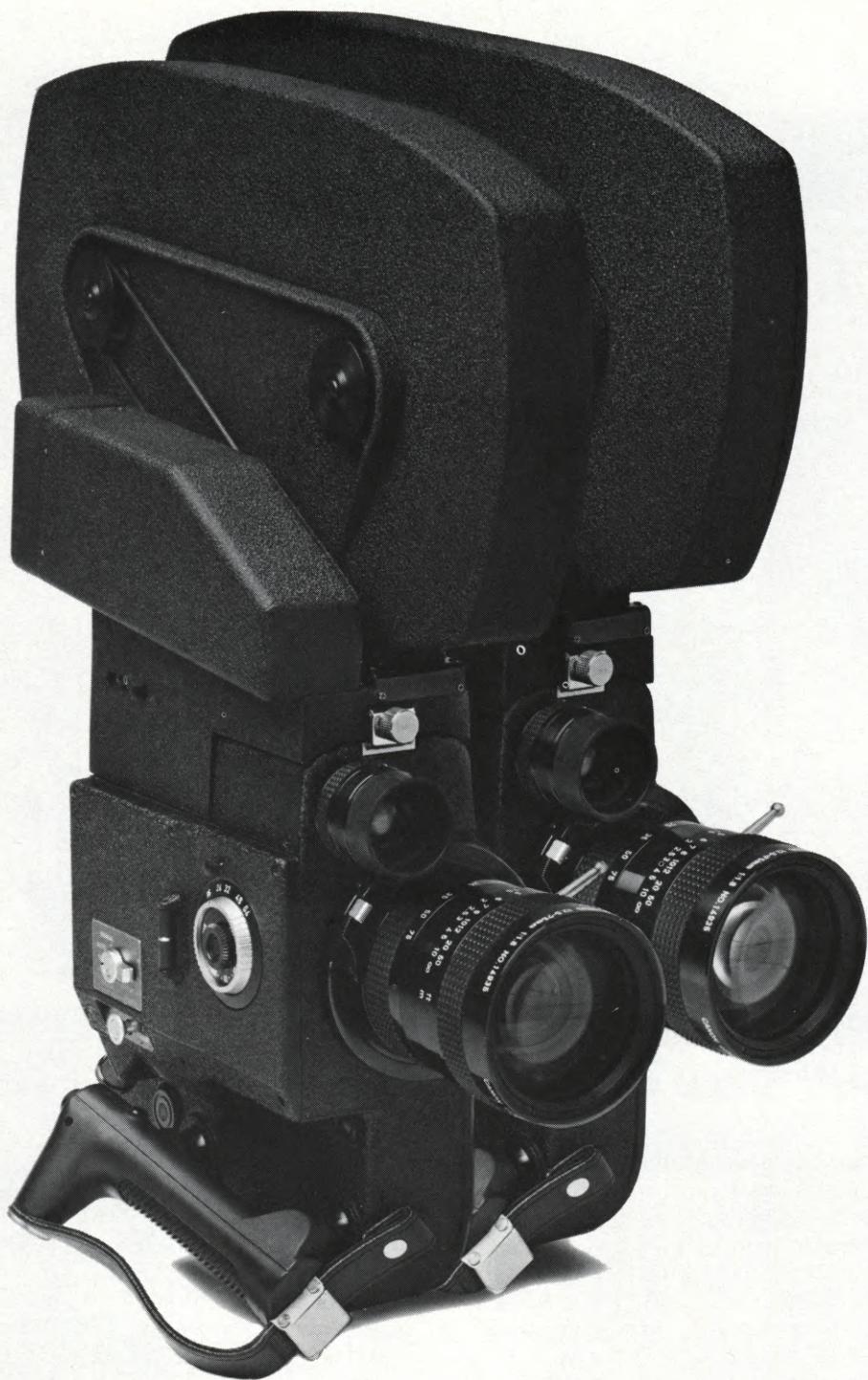
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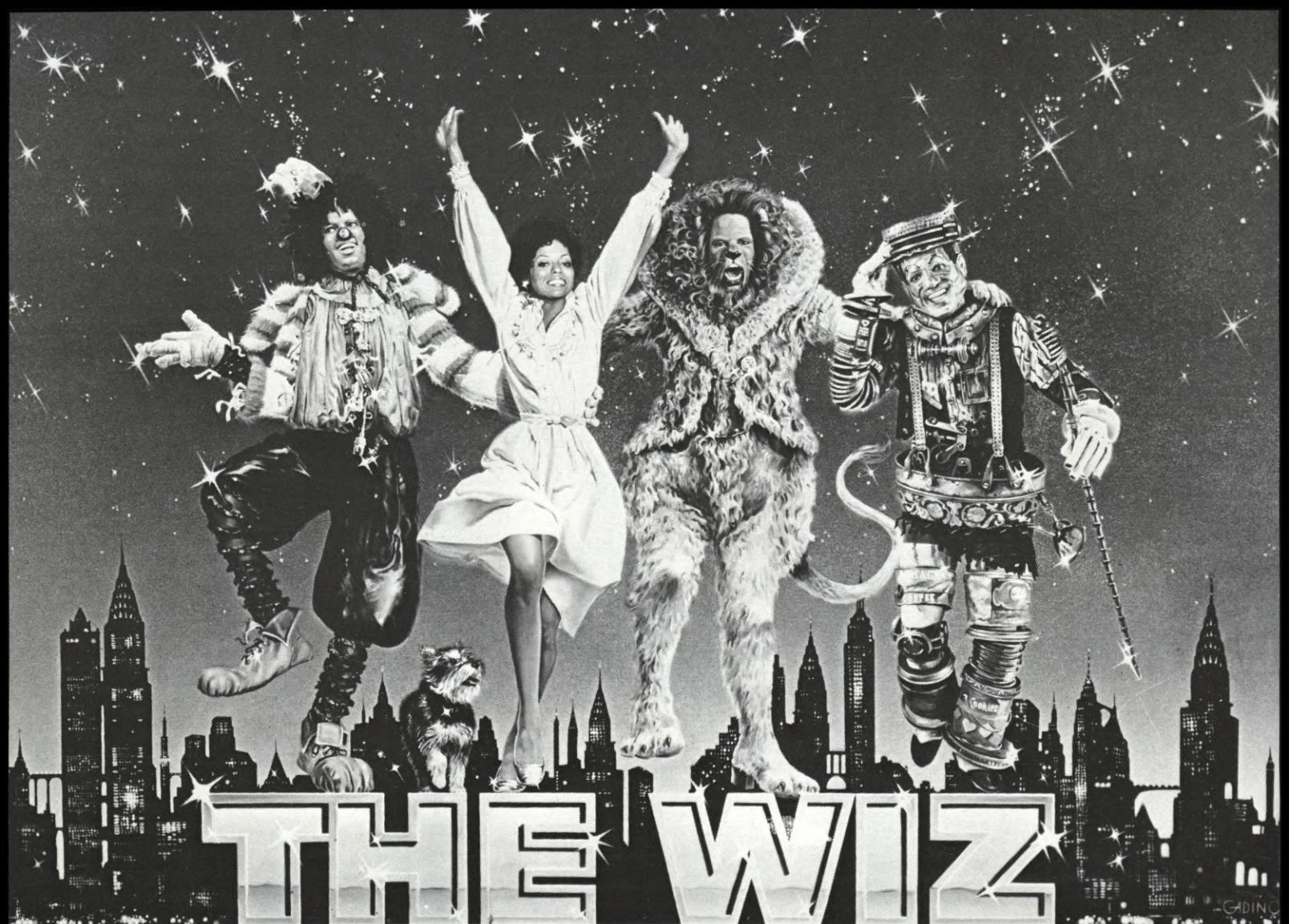
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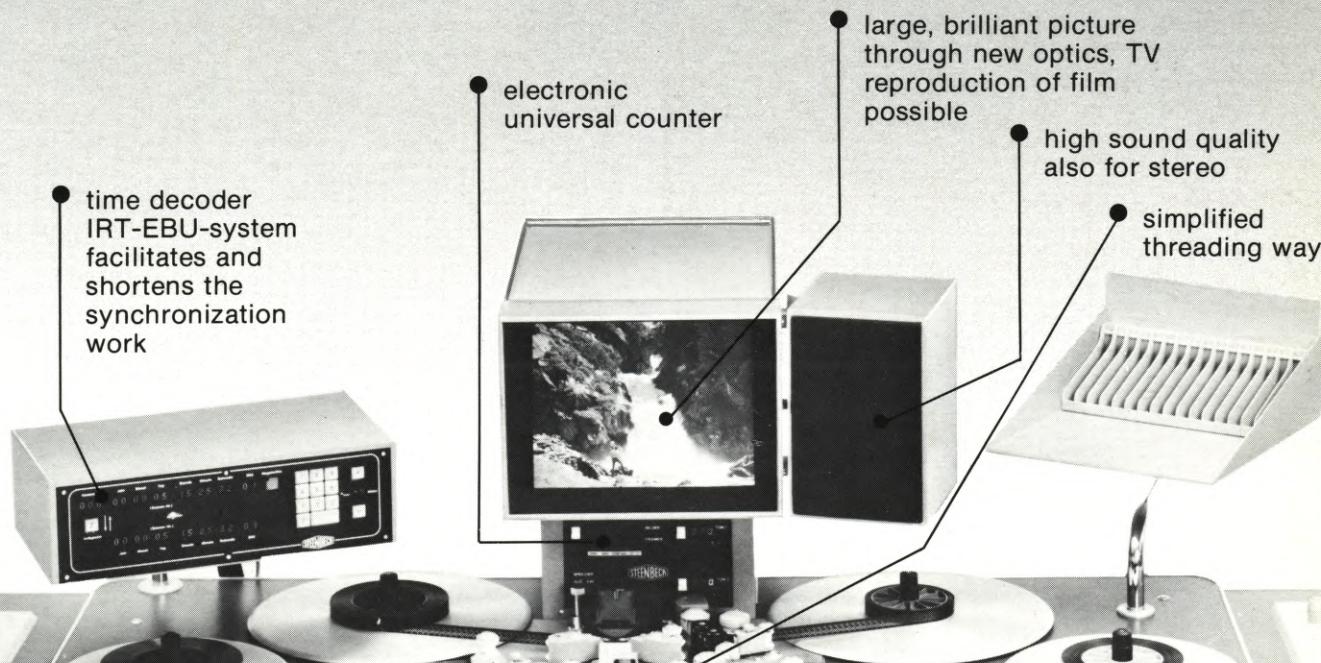


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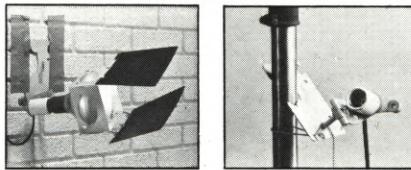
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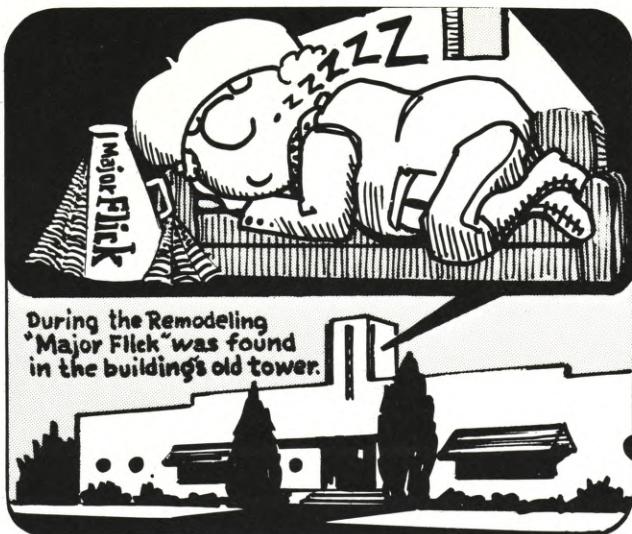


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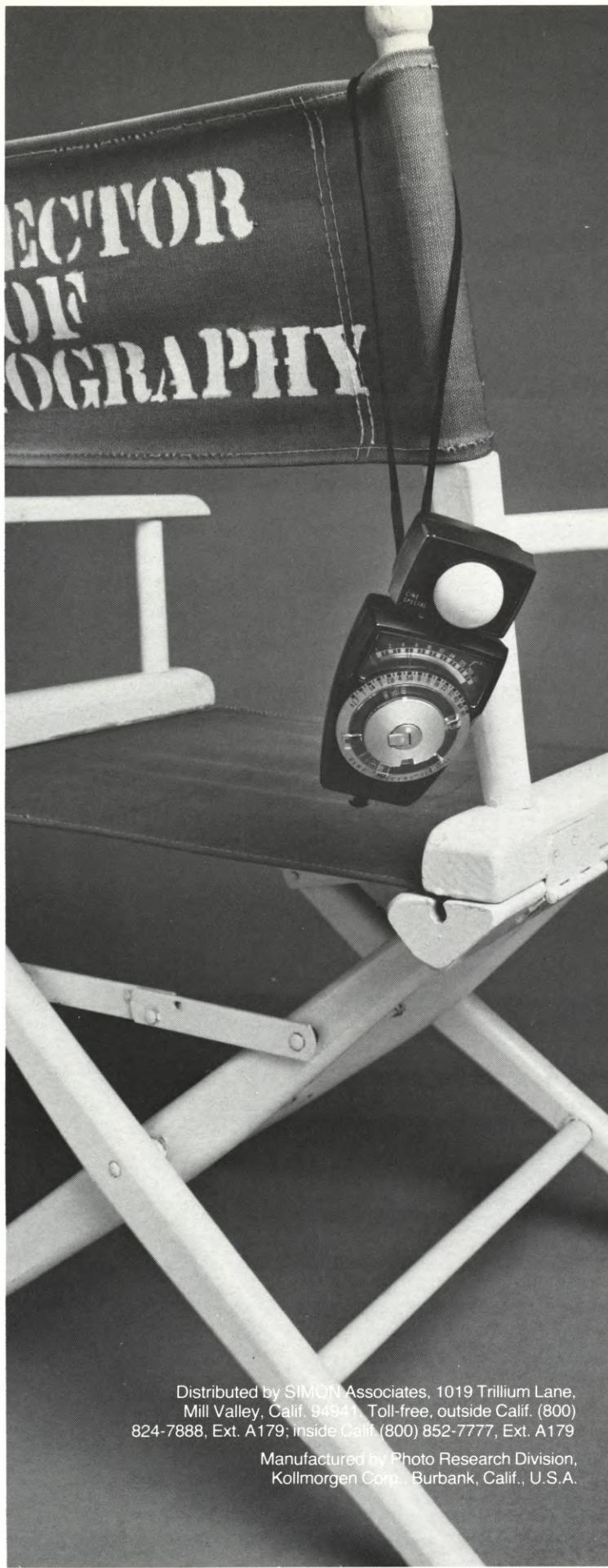
"I rent cameras mostly to people who make commercials," says ARRI dealer Denny Clairmont. "They shoot in helicopter-blade windstorms, ocean salt spray and desert dust. They mount the camera on a car and drive it down a dirt road."

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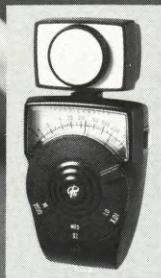
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Film 79

IN LONDON

On-the-spot at London's Sixth International Technology Conference and Exhibition, sponsored by the British Kinematograph, Sound and Television Society, this publication's Editor finds it the best yet

By HERB A. LIGHTMAN

LONDON

California-type weather . . . holiday crowds, but not nearly as dense as two years ago when the Silver Jubilee of Elizabeth II was in full swing . . . astronomical prices made worse for us Yanks by the depressed American dollar . . . Still, London is a lovely city in summertime.

Over at the Royal Lancaster Hotel, hard by Hyde Park, delegates are begin-

ning to register for FILM 79, the 6th International Technology Conference and Exhibition of the British Kinematograph, Sound and Television Society. During the past decade, this biennial event, organized and managed by a corps of dedicated BKSTS volunteers, has become (along with *Photokina* and the SMPTE Conference) one of the world's foremost forums for the exchange of motion picture and television technology.

Familiar faces from far and wide are

beginning to appear and there are warm mini-reunions going on all over the registration area. That's part of what it's all about—getting together with your colleagues from the ends of the earth every two years to renew friendships, exchange ideas and refresh the spirit.

There is one gnawing apprehension: the awareness by the promulgators of FILM 79 (and some of the guests) that this event, overwhelmed by its own success, has long since outgrown any facility which Central London has to offer. To be sure, there is a vast convention complex available at Wembley, but it is cold and barnlike (lacking the desired atmosphere of intimacy) and is far from the West End, where the delegates much prefer to be quartered.

Two years ago, with all best intentions, the worthies of the BKSTS tried to remedy the situation by moving the event to the more commodious Grosvenor House Hotel. It was a disaster. True—there was considerably more space for the equipment exhibits and the presentation of papers, but the service in this beleaguered hostelry left much to be desired and the intimate atmosphere was non-existent.

This year, everyone I talk to seems delighted to be back at "The Royal Lanc", as it's affectionately called, even though it's evident from the start that things will be a bit crowded up. They are indeed. The equipment exhibition area, broadened out to fill every available nook and cranny, is still not large enough to accommodate all who need space to display their wares. The seating in the papers presentation auditorium has been chopped down, so that "Standing Room Only" prevails for the more popular presentations. No matter. We're home again.

Under the patronage of H.R.H. The Prince Philip, Duke of Edinburgh, FILM 79 formally gets underway on the morning of July 2 with a welcoming address by BKSTS President R.F. Ebbets.

This is followed by a paper entitled "The Film Story: Yesterday, Today and Tomorrow", delivered by Ken Mason of Eastman Kodak (see Page 876). It is a stunning presentation, illustrated by a smoothly flowing medley of more than 100 color slides. Ken's speech tackles





Every available inch of exhibition space at the Royal Lancaster Hotel was taken up with displays of equipment during FILM 79. Since this event follows Photokina by nine months, it receives an influx of new equipment that was not ready in time for the Cologne exhibition, with the result that there are many pleasant surprises. For example, FILM 79 featured three new, highly sophisticated 35mm cameras and an image stabilizing device only hinted at during Photokina.

head-on the ticklish subject of film-video tape rivalry, which has been debated endlessly over the years. Using a combination of indisputable logic and solid statistics, he arrives at the conclusion that *there is no rivalry*. There is only the cross-fertilizing coexistence of two valuable media of communication, each of which has its distinct advantages.

This thesis is reinforced by a following paper entitled "Film is Good for TV and TV is Good for Film" (see Page 880), delivered by Peter Morley, a prominent British director who routinely switches from one medium to the other as the demands of the assignment dictate.

Other highlights of Monday's papers presentation include: "Trends in Television Production Techniques", by Peter

Rainger; "An Illustrated Guide to Television Commercials", by Patrick Hayes; "The Computer as a Production Tool", by Dr. J.O. Jenkins; "Moving Pictures to the World", by Richard Price; "Distributing Non-Theatrical Film Product", by Iain Muspratt; "The Classification and Control of Cinemas in France," by Claude Soulé; "Flying with Superman", by Zoran Perisic (see Page 882); "A New Noise Reducing Radio Microphone System", by Frank Kelly; and "A New Approach to Image Stabilization" by Horst Bergmann.

The latter marks the eagerly-awaited wraps-off revelation of the hush-hush image stabilizer which Arnold & Richter so secretly guarded at Photokina '78.

In the evening there is one of those

occasions of pomp and circumstance so dearly beloved by the British—the President's reception for overseas delegates at The House of Lords. Since it's a bit formal for my casual tastes, I opt to spend the evening privately with family and friends who live in London.

The papers sessions on Tuesday, July 3 are devoted to FILM TECHNOLOGY and include the following: "HMI Without Fear of Flicker", by Richard B. Glickman; "A New Gevacolor Negative-Type 682", by A. Vervoort and H. Stappaerts; "The Lightflex Electronic Matte Box", by Gerry Turpin; "Modern Techniques for Optical Trick Cinematography", by Roy Field (see Page 892); "Tape-to-Film—A Major Step Forward", by Fred Weinel; "Time Continued on Page 884

THE FILM STORY: YESTERDAY, TODAY AND TOMORROW

Film 79

By KEN MASON

I remember the manner in which our chairman, Walter Fallon, opened his remarks at a SMPTE conference a few years ago. Walt had started his career at Kodak as a scientist. He said something to the effect that after appearing before a wide variety of audiences, it was a special treat for him to be back with a group of people who could appreciate the enduring beauty to be found in a sensitometric curve.

While our perspectives may be somewhat different, I think Walt and I both share the same kind of enthusiasm when it comes to looking at where film has been, what it's doing today, and where we see it headed tomorrow.

The history of motion pictures, of course, goes hand-in-glove with the history of the cinema. That's been our traditional association.

Television was an early benefactor of film's well-established entertainment value. Along with motion pictures for theater consumption, television is film's second largest market...and a healthy one at that.

That's why we were a little surprised to hear that some folks were saying that the percentage of television programs produced on film is diminishing at such a rate that zero is only a few years away.

Well, as I say, this came as news to us, and some of our market analysts took the trouble to do a head count on the U.S. shows telecast during the 1978-79 season. Overall, 41 percent of TV air time is devoted to film-originated programming.

But it is during prime time that the huge TV audiences assemble. For the 1977-78 season, 75 percent of primetime hours originated on film.

For the 1978-79 season, that figure was 83 percent, and early indicators are that the 1979-80 figure will be 86 percent. That kind of "decline" has just as much enduring beauty as a sensitometric curve.

Also, a look at the latest film production and sales figures for all manufacturers indicates that somebody somewhere is buying a lot of motion-picture footage. Apparently, the word hasn't gotten around about the demise of film.

Of course, these gloomy forebodings are not exactly new. We received the first announcement of the imminent passing of film with the introduction of video-recording equipment in the mid-fifties.

An industry leader discusses the status of film applications, primarily motion picture, and surveys some exciting developments, addresses challenges and identifies interesting new opportunities

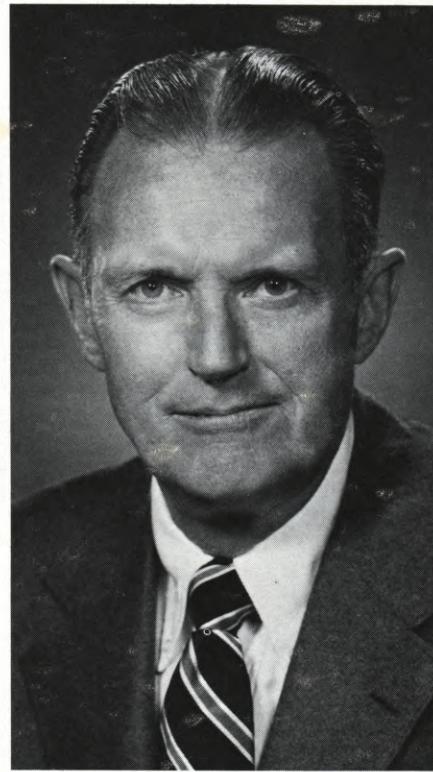
In the meantime, the quality of film has become better and better. The cost of film, as a component of production, has not altered appreciably over the years relative to all other production costs. (I am reminded of the fact that Eastman Color Print Film, if I wanted to express it in dollars, is exactly the same today as it was when the product was introduced in 1950.)

Under the circumstances, one is tempted to drag out the old Mark Twain chestnut about the report of his death being greatly exaggerated.

But that one has been over-used. Anyway, there are a couple of other bits of Twain wisdom that seem more appropriate here.

To the story of his life, Mark Twain once wrote that he "was seldom able to see an opportunity until it had ceased being one." On another occasion, he added: "You can't depend on your eyes when your imagination is out of focus."

And that is very much like the story of the broader technology that unites us all, in which motion pictures and television



(ABOVE RIGHT) Ken Mason, Vice President, and General Manager of Motion Picture and Audiovisual Market Division, Eastman Kodak Company, opened the papers program at FILM 79 in London with the address excerpted here. (BELOW) When videotape became practical, doomsayers predicted the death of film—which, at this writing, remains a very healthy corpse indeed.

(Continued on p. 28)

Film Is Dead

Hollywood, April 24
Spokesmen for the emerging
electronics image recording in-
dustry have predicted that the
high-quality pictures produced
by videotape spell the end of
motion picture film for use in
television.

Demonstrations of the new
Amplex color videotape system
will be shown at the West Coast tele-

... even radio show up merely as different routes to the same end. This is "the technology of making experience repeatable," as some writers have phrased it.

The development of this technology has been characterized by frequent appearances of opportunity cunningly presenting itself to beholders as just one problem after another. Let's recall a few of them.

For a starter, we could go all the way back to the precursor of motion pictures, sound recording. Many portrayed the early phonograph as a contrivance of the devil. But who came up with the most alarming vision of all?

Believe it or not, it was that popular bandmaster of his day, John Philip Sousa. He penned this grim warning:

"In the prospective scheme of mechanical music, we shall see man and maiden in a light canoe under the summer moon on an Adirondack lake with a gramophone carolling love songs from amidships."

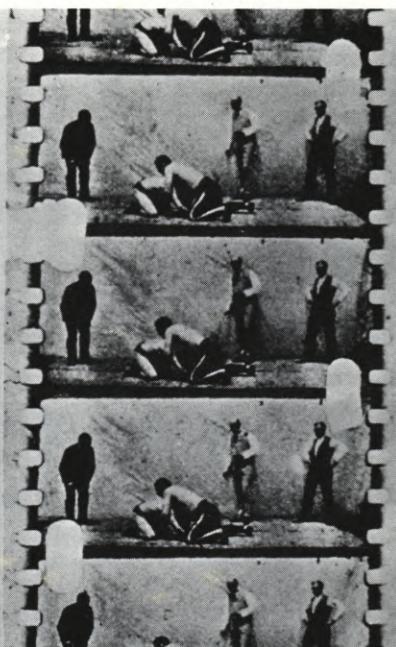
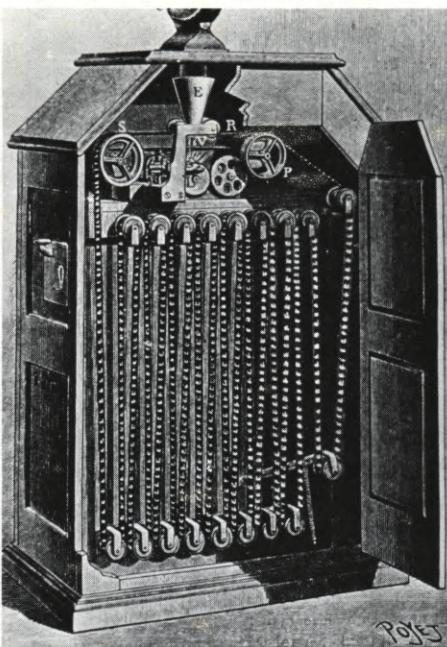
And: "The Spanish Cavalier must abandon his guitar and serenade his beloved with a phonograph under his arm."

And finally, "children are naturally imitative, and if, in their infancy, they hear only phonographs, will they not sing, if they sing at all, in imitation, and finally become simply human phonographs—without soul or expression?"

Maybe the old "March King" had something there after all.

But you have to suspect that Sousa may have been less concerned about the guitars of Spanish Cavaliers than he was about playing dates for big brass bands.

When Thomas Edison, who had invented the phonograph, applied the same thinking to the visual image, he came up with the Kinetoscope. (Note the



When Thomas Edison invented the Kinetoscope (note the 70mm format), he never visualized it as anything more than a penny-in-the-slot, hand-cranked peepshow. He felt that if the images were projected for more than one person at a showing, he would run out of customers in no time.

70mm format.) But Edison refused to let his imagination roam beyond the penny-in-the-slot, hand-cranked peep-show, because he foresaw another of those problems. If the images were projected so that more than one person could see them at a showing, he would run out of customers in no time.

Back on the sound side, in 1915 an enterprising young wireless operator named David Sarnoff advanced a novel plan for broadcasting signals to be captured and turned into sound for public consumption. His "Radio Music Box" would bring music, entertainment, and news into the home. His associates of the time greeted the idea as an unsolvable paradox. If you broadcast something,

how could you be sure who received it?

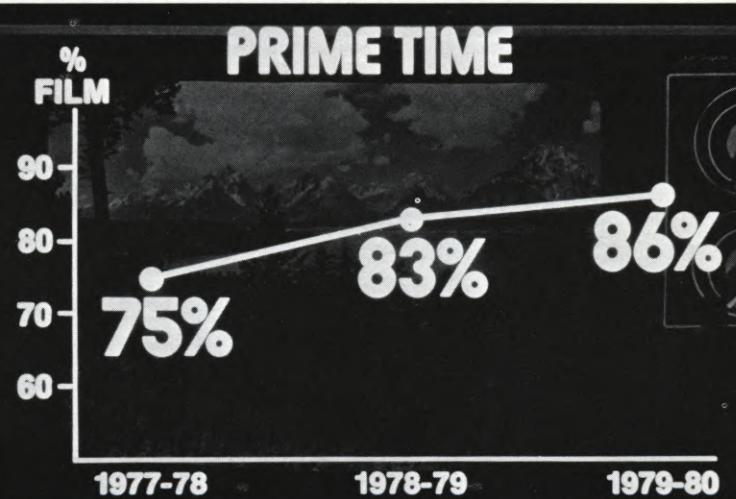
Besides, it would kill the sales of phonograph records.

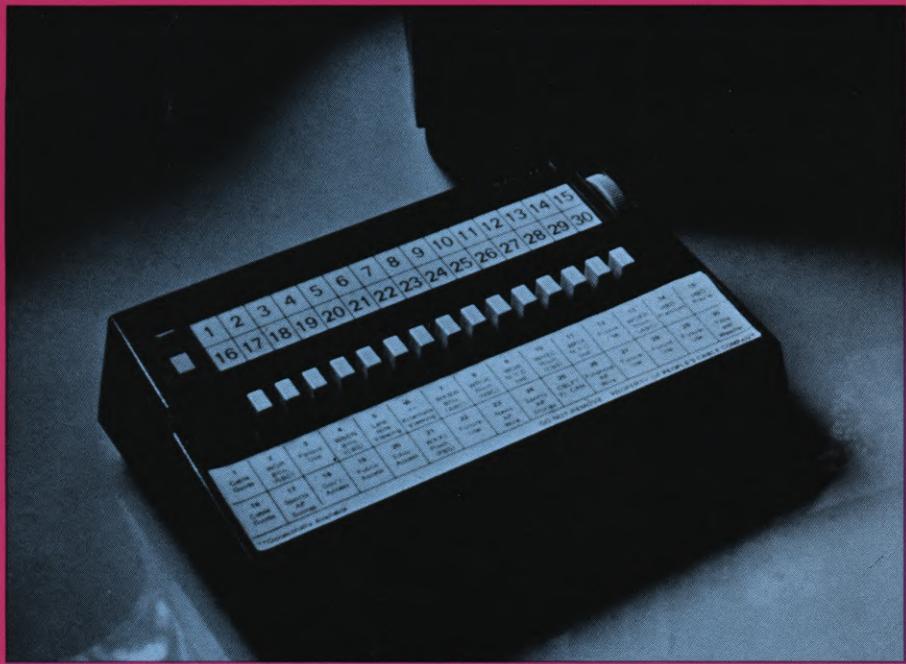
When sound and sight came together in the "talkies", a witch's brew of new problems appeared. The microphone became the dictator of content and creativity. Production moved into rooms with walls literally, rather than figuratively padded. The camera was relegated to a sound-proof box, with its capabilities of expression shackled. The voice of the director was stilled, at least during takes.

And, since few of the day's leading players were vocally geared for the big change, where would the stars come from? Who would sell tickets at the box office once the novelty of sound wore off?

Cold figures tell the story about film's supposed "demise" in TV programming. (LEFT) Market research shows that 41 percent of total TV air time is devoted to film-originated programming. (RIGHT) However, the more meaningful figures apply to prime time, when the huge viewing audience is assembled. Here film enjoys a current 83% majority, which is expected to rise to 86% in the next year.

TOTAL AIR TIME
41%
FILM-ORIGINATED





Cable TV is growing by leaps and bounds. It allows viewers, for a fee, to watch superior entertainment, including first-run motion pictures, uninterrupted by commercials. Several major companies are active in the field and their success proves that people will pay for better entertainment.

(LEFT) Videodisc is waiting in the wings with its own set of advantages and appeals. It should be the next entertainment system to catch fire. (RIGHT) At the Kodak Laboratories in Rochester, N.Y., some exciting things are going on in lasers, but the author cautions that life in the laboratory just isn't the same as life in the real world. It takes years of on-the-job usage to work all the problems out of a new system—and film has withstood the test of time.



(LEFT) Theoretically, videotape can be reused—but only at the expense of losing program material or transferring it to film. Many historic and valuable programs have been lost because the studio could not afford to tie up the tape. (RIGHT) During the year 1978-79 Kodak will have spent more than 800 million dollars on research and development. As can be imagined, a share of that money is going into the study of light-sensitive materials.



The coming of television opened up a whole new section in the morgue.

Radio was doomed. Now that we could have pictures to go along with words and music, nobody would be content to just listen.

The movies were doomed. Since people could have their entertainment "free" and "live", they weren't likely to pay to get it canned.

Newspapers did not look long for this world either. With the advent of TV journalism, tomorrow's headline would be obsolete before it could be set in type.

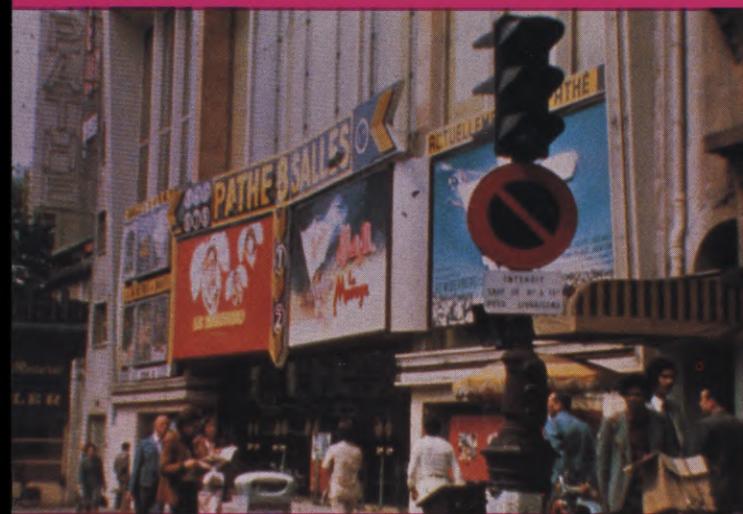
Then another major impasse was reached with David Sarnoff, who apparently had not learned from his earlier "problem" in establishing an audience for broadcast radio, committed the NBC network to color. Where was all that program material and color going to come from?

Well, here we are in 1979 and there's no lack of color programming (a good bit of it supplied by film, we could add parenthetically).

But radio has to be judged a pretty healthy looking corpse. There are more



(LEFT) The electronic camera is not a recorder; that job is still handled by a second piece of equipment that is inseparable from the camera. (RIGHT) The film camera IS the recorder. It has the film inside it. Until electronic cameras and recorders become a good deal less costly, a lot lighter, and shed their umbilical cords, they are likely to see limited use in location shooting.



(LEFT) A growing trend favors the multiple, "back-to-back" theaters which effect savings by sharing common walls, foyers and projection facilities. Here is such a unit in Paris that has eight screens. (RIGHT) Flanked by actresses Maggie Smith and Maureen Stapleton, a gleeful Ken Mason accepts a Class I ("Oscar" statuette) Academy Award for Eastman 5243 duplicating color movie film.

radios in use than television sets, phonographs, and automobiles combined. Incidentally, radio is the chief medium for promoting the sale of phonograph records.

Newspapers have proved to be rather durable, too. While the absolute number of daily publications has thinned slightly over 25 years, total circulation worldwide has seen a net gain.

Well, how could so many knowledgeable people, so often, lose sight of the opportunity for the problems? What caused the contemporary imagination to go out of focus—as Twain put it?

More important, what can we glean from it all that might apply to the heralded confrontation between photography and electronics?

It's not difficult at all for the imagination to slip out of focus when it has to be filtered through a series of misdefinitions, misimpressions, misassumptions, and mismatches, as well as myopia, myth, and outright fallacy. And it seems that the technology of repeatable experience, by its nature, abounds in all of these.

To take an obvious example, there is the *misdefinition* of the movie audience as those people who buy a ticket at a box office to get in to see a motion picture.

By this definition, since 1945, the audience has shrunk from 70 million admissions a week to 22 million a week last year. Numbers like those would do a lot to blur the imagination of anybody considering motion pictures as a viable business.

Yet, the fact is that feature films consistently run between 15 and 20 percent of prime-time television programming. When movies are shown on American TV, it is not uncommon to reach an audience of 25 million or more viewers. That means that on any given night, 25, 50, or even 70 million viewers may be watching movies. Those figures certainly add a little perspective to today's movie audience.

It's significant that these figures represent U.S. television—a mature television service. Normally, we would expect a market to start out on film and then move to a more advanced, more expensive

technology. But we do not see this happening. We do not see it happening anywhere in the world.

Closely related to the misdefined audience is the myth of market saturation. It's arrived at by calculating the hours of television broadcasting and the number of theater screens in any given marketing country. The first is limited by the length of the day. The second, while showing some growth, reflects structural rearrangements more than actual expansion.

We see such rearrangements in the increase in back-to-back theaters which effect savings by sharing common walls, foyers, and facilities. There is such a unit in Paris. It has eight screens.

Producers are influencing saturation through a process known as "four-wall-ing", where they rent a single theater to better control exhibition variables. Namely costs.

"Saturation booking" is another trend. A producer will make large numbers of prints of a feature and get them into

Continued on Page 924

FILM IS GOOD FOR TV AND TV IS GOOD FOR FILM

Film 79

By PETER MORLEY

Film, some say, is threatened by video. Video, some say, is being consumed by its own rampant technology, thereby encouraging more use of film. Insecurity in one or the other can breed contempt for one or the other. I assume that one of the reasons why this paper has been included in FILM '79 is because of the implications of this relentless march of technology.

I also assume that the reason why I have been strong-armed into presenting this paper is that over many years I have been a user of both film and video. I am heavily biased therefore in favour of—both.

I am well aware that some of the points that I will be making will dip into areas covered by other speaker's papers. Let me reassure those experts here who may feel threatened that it is perfectly safe to remain in the hall—my remarks will be non-technical.

I must confess that I have an axe to grind about both film and video, but I will resist grinding it until the end of this paper.

To start with then, let me define what to me, and no doubt most of you, is the obvious. Film-making and television programme making using film or video (or indeed a piece of string) is the art of communication. The best movie of the year for the cinema screen, the award winning drama for the small screen, documentaries, commercials, sponsored films, news bulletins, State Occasions, cup-finals and, heaven help us, the Eurovision Song Contest. Each one of these is an act of communication. Facts, interpretations, ideas.

Or to put it more simply, story telling. And the point I want to stress is that it is the story that should dictate to a director whether to use film or video. Content before technique, this should be the golden rule.

Of course, I am aware of amazing developments. How can I help but being aware walking past the FILM '79 technical exhibits next door. Computerised programme and film-making, editing by numbers, film to tape—tape to film transfer; digital this and digital that; the whole world seems to be hell-bent on extracting digits.

I simply want to confine myself to the director's choice. A choice based on some of the differences between film and

video. The first of these I would call the textural difference. Again stating the obvious, we all know that film, first in the camera and then in the projector, moves intermittently. It starts, stops, pauses, then moves again. The eye perceives only the pause. (I warned you I was going to be totally non-technical, but I must confess that I speak with some authority on this subject because I started my career as a rewind boy in the projection box of the Dominion Theatre, Tottenham Court Road.)

Now, in video as we know, the image is created by an electronic beam moving at great speed, filling in, colouring in, if you like, 25 frames (so they tell me) every second. Amazing, both systems are amazing. Both systems work magnificently well. But they are quite, quite different. The movement of film through the gate, although hidden from the eye, produces a picture which simply "feels" different from the electronic image. So instead of quarrelling over this textural difference let us accept it—indeed, be grateful for it, and choose the right one for the right job. Would *LAWRENCE OF ARABIA* have looked and felt the same shot on video? Would today's Centre Court coverage at Wimbledon look better for being beautifully photographed in Panavision?

Video gives us immediacy, not only in time, but in presence. This "feel" is sharpened by the magnificent and sometimes cruel crispness of the picture. Cinematography, on the other hand, is an art form in its own right. The subtleties of lighting and exposure—of interpretation—available to the creative lighting cameraman makes film unique.

So that is one of the main differences—the difference of texture. Another set of differences is too obvious to dwell on. Logistics, size, cost, mobility and so on. Important of course, but for another occasion.

But I would like to mention another difference which fascinates me, which I have experienced over the years, which is difficult to label and, maybe for that reason not often talked about. I would call it the alchemy of directing a film or a television programme. A question of the relationship with other people, the human factor. And this is where film and video, too, are totally different.

In film, the relationship of the director

A British director who works in both film and video makes the point that it is the story or subject that must and does dictate whether the TV or film approach is preferred for a particular assignment

to his cameraman and later his editor is intimate, low-key, almost secretive. As though a conspiracy is at work honing the creative process. For the TV director using video, the opposite applies. He speaks simultaneously to his lighting director, cameramen, floor manager, vision mixers, sound balancer, many others—20, 30, 40 people, all at the same time.

His creative process is shared, almost in public, with a large group of eager enthusiasts. By and large his commitment has to be made then and there—by and large, the point of no return is reached then and there.

Unlike the director using film, who can postpone decisions, evaluate compromises and make his final commitment much later in the privacy of his cutting room—the TV director really is in the hot seat and lives rather dangerously. (Although electronic post-production techniques have now reduced the heart failure rate.)

Film and video production create their own magic. The adrenalin flows in both—but at a different rate of knots. Fred Zinneman making *JULIA* for the cinema and Herbert Wise's *CLAUDIUS* for TV have a lot in common. Both are superb directors, immensely creative and inventive. They know how to get really fine performances from their artists. They know how to communicate with their creative technicians, they are both brilliantly successful. One uses film—the other video.

Can there really be anyone who thinks that film is better than video, or the other way round? Is there, in fact, a threat? Should protests be taken seriously from those who shout the loudest about Electronic News Gathering heralding the death of the film cameraman in TV, and yet remain silent, maybe in astonishment, at the rapidly expanding numbers of films made for TV?

In 1979 Euston Films (the film-making arm of Thames Television) have in production—simultaneously—a 13-part serial, an 11-part serial, a two-hour movie for TV, a ninety-minute movie for TV—all on film. Surely that cannot be bad.

And how about television dramas, single plays and so on, made entirely on film? They are not accidents of planning, they are largely the result of the stories *Continued on page 920*

FILM OR VT TIME CODE?—THE AMERICAN VIEW

Film 79

By EDMUND DiGIULIO

Attitudes toward time code for film reflect two distinctly different views: the one generally held by Europeans and that held by Americans. The Europeans have been actively working on the problem for at least a decade, and in 1973 the European Broadcasting Union (EBU) adopted as a standard the time code proposed by the German Radio-Television Institute (IRT). TDF in France has proposed a slight modification to the EBU code, but it remains essentially the same.

Most European manufacturers of camera, sound, and editing equipment have developed hardware to record and read this code. And a certain amount of this hardware has been purchased by various television organizations in Europe. The Russians have also purchased a fair amount of equipment utilizing the EBU time code for use during the 1980 Olympic games.

The usefulness of the EBU time code does, however, appear to be limited. A BBC task force visited various TV installations in Germany in 1977 and concluded that, while having time coding on film is certainly to be desired, it is an awfully expensive investment just to simplify the task of synching up dailies.

With regard to the market for EBU time code equipment in the United States, it virtually does not exist. With rare exceptions, no equipment of this type has been sold in the U.S. to date.

How do we explain this dichotomy?

To begin with, the European TV establishments that have purchased this

Ed DiGiulio, President of Cinema Products Corporation, explains why he feels Americans have failed to accept the EBU time code system.

An attempt to bring order out of chaos in the heated debate over which system of time-base coding should be standardized. The author details what he feels it would take to create an acceptable system

equipment are all government-owned; and equipment purchasing is dictated by policy decisions that need not always have an immediately viable economic justification. Even in this more favorable environment, however, I believe the amount of EBU time code equipment purchased in Europe has been very limited.

In the American view, though, seeing at each succeeding trade show new equipment to implement the EBU code—now making it man-readable, now being able to print it—we get the feeling we are looking at the Emperor's clothes. In other words, we see all this excellently designed equipment, but does it have any real substance?

In the American market place where all filmmaking, both theatrical and for television, is privately owned (with the one exception of the Public Broadcasting System which is partly government financed), EBU time code equipment in its present form has not been demonstrated to be economically viable.

Current thinking in the U.S. is that we had better either forget the whole thing or come up with a different approach to the problem of time code for film that can, by its increased utility, be economically justifiable.

In 1971 the SMPTE established a time code working group of which I was a member. In considering the IRT proposal that became the EBU time code standard, we were concerned by its limitations. The EBU time code did not uniquely identify every frame. It was located in the sound track area so that it could not carry through to release prints. And the low bit rate of 100 bits per second seemed to rule out the possibility of high bit rate codes to control auto-programming.

The committee found (as committees do) that it could not "invent" an encoding process for motion picture film to fulfill anticipated needs. However, in synopsis, it did define the requirements for an effective code . . . with several applicable to telecine:

—A suitable time code would enable the precise synchronization of sound and picture with any number of cameras and recorders, at any point during a run.

—The application of coding would become the log of time sequence and script index.

—Each frame should contain a minimum data content, consisting of time, scene, and take numbers, as well as production number. Camera or recorder number and date must also be accommodated, of course.

—The editor could use the code for identifying specific scenes or portions of a scene. The code would also provide an excellent index if it became necessary to reprint or retransfer a portion of a scene. This type of code system would also enable the use of computer editing systems to automate the editing process.

—When the final workprint has been assembled, the code segments which correspond to each scene would enable the negative to be assembled with great ease.

—The code would be useful for looping of dialogue or effects as a means of automatically locating the areas to be replaced, and to control the film movement.

—A code used for production could also be used to index sound effects and music library material.

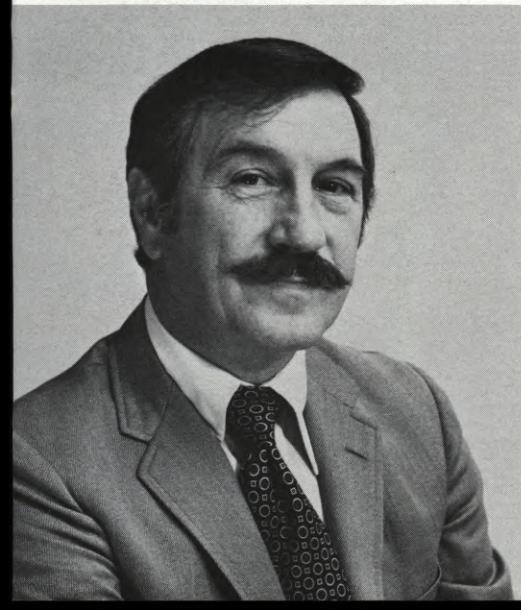
—If a new code is created for the release print as an elapsed-time code, it would be useful in music scoring, re-recording, printing, release print scene replacement, commercials insert, etc.

—Any specific code used should be compatible with television practices to permit film records to be interlocked to one another and/or to videotape. This does not necessarily mean that the proposed SMPTE videotape time code has to be used for film. However, it would probably be economical to use this proposed code on the magnetic materials in the film industry, provided that certain difficulties such as frame counting could be resolved.

These requirements can be developed into seven basic suggestions, and were combined with general code performance considerations in the committee's report.

In brief, the 1971 committee recognized the need to modernize the motion picture process, but it also recognized that current editing techniques were efficient, and in some cases, more effective and efficient than electronic editing. At the time of the report, the potential benefits of coded film were still awaiting inventive or developmental processes.

Over the past several years, however, *Continued on Page 946*



FLYING WITH SUPERMAN

Film 79

By ZORAN PERISIC

Of all special optical effects, the illusion of flying is probably the one most difficult to create convincingly. The key to this is to achieve a total freedom of movement of the object in flight within the background.

Standard optical process systems, which are used extensively at present, all have considerable limitations in this respect:

Colour difference—travelling matte process, usually referred to as blue-backing process, is not only very time-consuming and expensive, but has a major limitation in achieving a good coordination between the flying object and the background. Even with the use of Video to playback the background scene, it was difficult to achieve a good relationship between the background and the foreground.

A great number of shots were done in

Placing the ZOPTIC System within the context of other special effects methods of making a subject appear to fly, as was achieved with such extraordinary success in the recent filming of **SUPERMAN**

this way for **SUPERMAN**, but only a few were used in the final film, because they could not be made to work successfully.

The image of Superman had to be reduced further on an optical printer from the point where the original move ended. This transition is difficult to achieve. Other standard drawbacks of this system are: loss of colour balance, lighting restrictions and the old familiar black line around the subject.

Blue is normally excluded from the wardrobe of artists when using blue backing—which of course was not possible in the case of Superman. The solution here was to make his tights out of a specific type of blue which was actually bordering on green in order to get a separation from the blue backing.

The only optical house which had been doing travelling matte work successfully closed down just at the time when

SUPERMAN was starting, so that all the work of this type had to be sent out to Los Angeles.

Back-Projection is another standard process which can be used for creating flying effects to a very limited extent. But because this system is the least flexible for this type of work it was not even attempted.

Front-projection, the natural successor to back-projection, offered much better possibilities. This process involves projecting a pre-filmed scene via a 2-way mirror onto a special screen. This screen is composed of a multitude of tiny glass spheres which are coated on the outside of one half and imbedded in the backing material with the clear half on the outside.

A light ray entering through this “window” undergoes total internal reflection and exits from the glass sphere along the



same axis as it entered. These light rays are picked up by the camera lens behind the beam splitter. The nodal points of the projection lens and the camera lens must be in exactly the same relative position. The reflectivity of a screen made up of these tiny spheres is so great that even a white object placed in front of it will appear as a black silhouette in the projected background scene. This silhouette is, in fact, an instant matte of the subject. With the appropriate illumination, the subject can be made to blend in with the background.

When the projector and camera lenses are lined up correctly, the shadow created by the subject on the Front-Projection screen is not visible by the camera lens. If the alignment is incorrect, then a black fringe appears—the camera lens is seeing the shadow of the subject at that point.

Because Front Projection evolved from Back Projection, the equipment in use has consisted generally of the same heavy cumbersome projectors, modified so that the camera could be mounted onto the same base as the projector. This arrangement is perfectly satisfactory as long as the same type of work is attempted in Front Projection as had previously been done with Back Projection; i.e. static set-ups where the background is added to a suitable foreground action. The majority of standard process projector shots are of this type. However, when it comes to a flying effect, a different problem arises.

A subject such as an aeroplane or Superman, for that matter, has to be moved across the picture. Unfortunately, wires tend to show up in Front Projection. One way around this is to do an extra "cover" take of the background plate only and use this to eliminate the wires "optically".

The other problem with wires is that it is difficult to get a smooth enough movement. It is, in fact, for this reason that most model shots involving wires are done at high camera speeds. However, most standard process projectors do not have the facility to run in sync with the camera at speeds above 24 FPS.

Vibrating wires were tried out extensively on Superman. The main problem with this was the uneven pressure on the wires as Superman leans to one side. Even if it had been possible to make the wires invisible, there would still be the problem of physically moving a man from point A to point B at incredible speeds. This is difficult enough in a straight line, let alone when the man is expected to execute complicated manoeuvres. There were occasions when Chris Reeve was thrown into a net placed at the end of the

track to stop him from going through the studio wall! The swing on a curved track is unpredictable and often he came to within inches of hitting parts of the set!

Ideally, the subject would be suspended in the air by some invisible means. One such method is to put a pole through a hole in the Front Projection screen which is fixed to a rigid base on the other side of the screen. The model is attached to the other end of the pole. The camera lens is placed in line with the pole and the model acts as a mask for it. A knuckle-type joint is used to make the model pitch and yaw. The pole can also be made to rotate.

This arrangement works very well in certain situations where the subject is seen stationary and the impression of speed and direction of flight is conveyed by the background. However, this is all that could be done with the standard Front Projection approach. The subject could not move across the frame because it is fixed to the pole, but if the entire Front Projection machine (i.e. projector and camera) is panned from side to side, the subject appears to travel across the frame. Tilting the camera/projector compound makes the subject appear to go up or down in the frame. This, coupled with manoeuvrability of the subject does make for a much more realistic flight effect. The projector/camera compound has to be sufficiently small to enable it to be manoeuvred in this way.

A lightweight projector was built by Jan Jacobson for SUPERMAN which could be mounted on a geared head. By using two geared heads crossways, panning, tilting and rocking movements could be accomplished. By this means, Superman could fly across the picture and up and down, but always in the same plane. He could not be made to fly "in depth" through the picture towards or away from the camera. In order to make him fly really convincingly he has to do just that—to move "in depth". This is, of course, physically impossible to any useful degree using the pole, even with a model, let alone a person. Flying him on wires was still the only way, despite all the drawbacks. However, the very idea of a physical movement in depth by whatever means is doomed to failure because it goes against the golden rule of Front Projection. The subject should be kept closer to the screen than to the camera wherever possible, otherwise serious "fringing" problems occur; the reason for this is quite simple—the shadow of the subject will have softer edges as the subject is moved away from the screen because it is related to the depth of field of the projection lens.

Since the shadow of the subject is, in fact, its matte, it is impossible to match a

soft edge of the shadow with the sharp clean edge of the subject, unless the subject is allowed to go out of focus proportionally also. However, this would be defeating the object of the whole exercise.

Therefore, the only way satisfactory results can be achieved is to keep the subject as near to the screen as possible and avoid any appreciable movement towards the camera. Yet on the other hand, without movement "in depth", the whole illusion of flying cannot be achieved successfully.

This is where ZOPTIC came in. This system makes the subject appear to move towards or away from the camera while it is in fact stationary. This is accomplished by using two matched zoom lenses in synchronisation—one on the projector and one on the camera. The size of the projected image is altered with the zooming action of the projector lens, but the corresponding zooming action of the camera lens cancels this out, so that through the camera viewfinder the background appears to be a constant size. Meanwhile, the subject is only affected by the zoom action of the camera lens and appears to grow in size as the lens zooms in. It is this apparent increase in the image size of the subject against a "constant size" background, which creates the illusion that the subject has moved closer to the camera, whilst the real physical distance between the two in effect remains unchanged.

The Neilson-Hordell projector, which was able to take the ZOPTIC system, proved to be too limiting for certain manoeuvres. The original rig, although quite small by normal standards, was really designed for general purpose Front Projection and not exclusively for flying. On the instigation of the Director of Photography, Denys Coop, and with the enthusiastic backing from Richard Donner, I designed the flying rig which can be mounted onto two geared heads set at 90° to each other. This way, Superman could be made to fly in any direction, as well as towards or away from the camera. He was at last free of any restrictions and virtually all Front Projection flying shots were done on this rig. Even for close-up shots, ZOPTIC was used constantly to produce subtle changes, adding more realism to the flight as though Superman was being photographed from an aircraft flying in front of him.

Following a series of tests, the first production shot to be done with ZOPTIC was the long shot of Superman and Lois Lane flying around the Statue of Liberty. Judging by the reaction of the director and the producer, it became obvious that the Flying Unit had made a breakthrough. Superman could really fly! ■

REPORT FROM FILM 79 Continued from Page 875

Code Printing Equipment Combining EBU Code and Numerals, by Jean-Jacques Bessire, presented by Norman Chapman; *"Seeing is Believing. How Conditioning Affects Visual Judgments"*, by Ron Venis (see Page 888); *"What is the Normal or Correct Exposure?"*, by Daan Zwick; *"Image Quality Transfer Through Film and TV"*, by Dr. K. Staes and L. Hayen; *"Simultaneous Presentation of Live Action and Film"*, by I. Ben Yehuda; *"Advanced Light Sources for 16mm and Super-8 Projection"*, by Dr. Ingoma Kugler; and *"New Developments from Oxford Scientific Films"* by Dr. John Cooke.

The printed program indicates that Jean-Pierre Beauviala will speak on *"A New Single-System Camera."* The equipment to be discussed is the new Aaton 7 Basic 16mm camera, which "has been designed to meet the need for a very robust, inexpensive single-system camera, for applications when ultra-quiet running is not necessary, and high-speed film transport is necessary."

For reasons not fully explained, Mr. Beauviala, at the last moment, decides to speak instead about his new Aaton 8-35 35mm Camera, an impressive lightweight, compact hand-held 35mm camera (see Page 922).

In the evening an "Equipment Users Seminar" has been scheduled. It is to be held in the Conference Room of the Royal Lancaster "with food and drinks available."

As for the subject content, the invitation states: "It is hoped the session will benefit those members and delegates concerned with maintenance of filming equipment, the problems of the maintenance technician, and the training of maintenance staff up to the standard needed now and in the future." David Samuelson will chair the event and I am asked to join the rather illustrious panel.

With much interplay between the panel

members and those attending, the evening quickly becomes an informal "rap session", as we say in America, and the discussion strays from the stated topics to include such burning questions as: "Can film schools really train people to make films?"

All in all, it is a rousing evening and, I feel, a very good way to achieve a productive interchange of ideas on an informal basis.

On Wednesday, July 4, the papers program is devoted exclusively to TELEVISION TECHNOLOGY. A wide range of pertinent topics is covered. However, since *American Cinematographer* readers are primarily oriented toward film, I shall not take space to list the topics here.

That evening, in a marvelous gesture of hands-across-the-sea amity, the BKSTS hosts a Fourth of July Party at the Royal Garden Hotel. I feel that our British colleagues are wonderfully sporting to help us celebrate our most important national holiday—considering the event that is being commemorated.

I am always amused at how "terribly British" I find myself becoming after only a few days back in England. This is not an affectation, but rather an atavistic inevitability, stemming from my having had an English mother (born and raised in London) and a string of maternal forebears stretching back, most likely, to the days when Britons were naked savages who painted themselves blue. However, on the Fourth of July at the Royal Garden these Anglophilic instincts are overwhelmed by the Stars and Stripes. Togged out in red jacket, blue trousers and white shirt (with a red, white and blue polka dot necktie to gild the lily), I am a veritable Yankee Doodle Dandy. It's all for laughs, of course, since I much enjoy laughing at myself.

As for the menu at the Fourth of July party, our British hosts have touchingly provided what they describe as "typical American food"—namely, hamburgers, hot dogs, pancakes and ice cream. Not-

withstanding the fact that at least three of these gustatory delights are of German origin, it strikes me that if we did indeed concentrate on such a diet in America, we'd all be intestinal basket cases.

Never mind—it's the thought that counts!

On Thursday, July 5, the papers program is devoted to AUDIO-VISUAL, featuring several interesting papers, including one which attempts to define what "audio-visual" really is.

In the afternoon there is a most fascinating program, the result of a collaboration between the BKSTS and the British Academy of Film & Television Arts. These two august bodies had already co-sponsored on July 1 a forum entitled "Trends in the content and artistic quality of films today", featuring producer David Putnam (LISZTOMANIA, MIDNIGHT EXPRESS), producer Gary Kurtz (AMERICAN GRAFFITI, STAR WARS), director Karel Reisz (SATURDAY NIGHT AND SUNDAY MORNING, ISADORA) and producer Barry Spikings (THE MAN WHO FELL TO EARTH, THE DEER HUNTER).

The BKSTS/BAFTA collaboration had also sponsored on the evening of July 3 a black tie buffet dinner, followed by a screening of HANOVER STREET.

The program now at hand—the third and final in this series—is entitled "SPECIAL EFFECTS '79", with my old friend, Academy Award-winning cinematographer Oswald "Ossie" Morris, BSC, as Chairman, and a panel consisting of Denys Coop, BSC, Derek Meddings and Colin Chilvers—all of whom were part of the team of six awarded "Oscars" for their special effects wizardry on SUPERMAN.

This event, like the two others before it, is held in the Princess Anne Theatre of the BAFTA's posh headquarters in Piccadilly, and the program is illuminated with film clips of special effect triumphs, dating back to the original KING KONG and working up to SUPERMAN and *Continued on Page 931*

A highlight of FILM 79, but billed as a special event outside the regular schedule, was the "Equipment Users Seminar", calculated "to benefit those members and delegates concerned with the maintenance of filming equipment, particularly location filming equipment, the problems of the maintenance, and the training of maintenance staff up to the standard needed both now and in the future." The lively interchange between panel and audience also considered other questions, such as: "Do film schools really teach people how to make films?" The well-attended seminar was chaired by David Samuelson.



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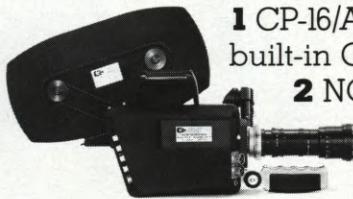


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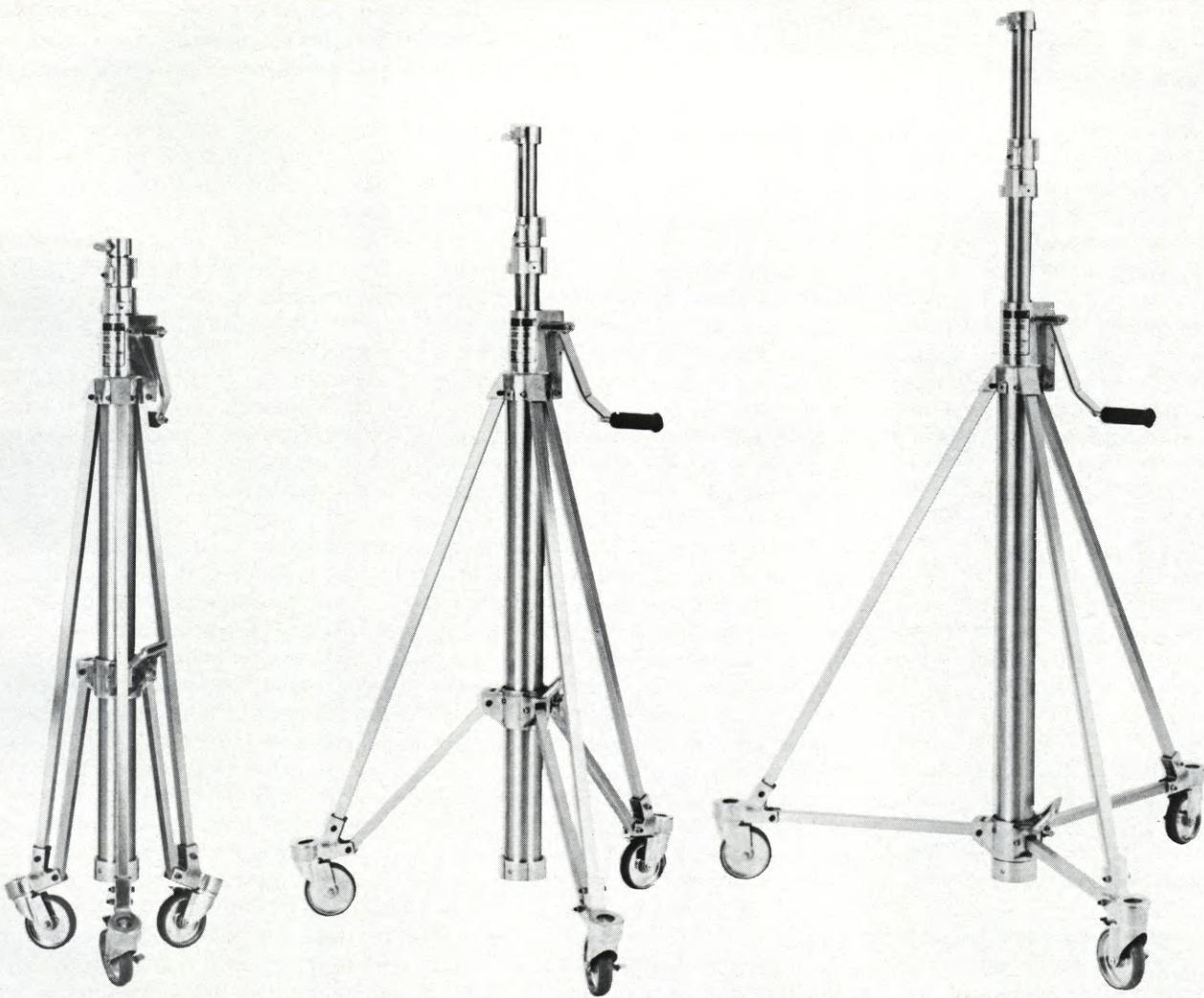
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SEEING IS BELIEVING

Film 79

By RON VENIS

This title is a well-known aphorism and generally is used in everyday conversation to imply that what we see is true. However, this is not necessarily so and perhaps a better title would be—"Is what you're seeing *really* there?" or even "Are you *seeing* what's really there?"

Seeing, of course, involves the brain, frequently in an interpretative mode, and the purpose of this paper is to illustrate that what is seen frequently depends upon the prior conditioning of the brain, rather than simply the observed physical properties of something. Here is one example of how powerful prior conditioning is:

Most people can stand on a scaffolding board or plank 9-10 inches wide suspended three feet or so above the ground and move quite easily on this plank. If the plank, however, was projecting not a few feet above the ground, but from the roof of a building 100 feet above street level, then few people would feel so sure about stepping out on to it. Even if still air conditions were carefully chosen, it would need a brave man to try the experiment, and the probability of his falling off would be pretty high.

The dimensions of the plank are quite adequate for almost anyone to stand on and he has the reassurance of this knowledge when he is 100 feet up on top of the building. Yet, quite obviously, the fear of falling off has influenced his behaviour and perception. The certain knowledge that he can stand on that plank is swamped by some deeper and more powerful programming of the brain. This "prior programming" concept deeply influences not only what we see, but also the way in which we respond to what we see.

Another example of prior conditioning is newspaper pictures where the main concern is the content and not the picture quality. By the generally accepted standards that all people in the picture-making business claim to have, the quality of newspaper pictures is always very poor.

Firstly, they are black and white, which in itself is not natural, as we normally observe the world around us in colour. Yet we see nothing remarkable in a black and white representation, perhaps, because we do not expect to see anything other than black and white pictures in a newspaper. The remarkable thing is that we do

not, in this sort of context, even notice the absence of colour, so powerful is our prior programming.

Secondly, the contrast range will be abnormally low, 10:1, perhaps, and the tonal scale is usually distorted with obvious black and white compression. By any objective standard the definition is poor and yet, despite all this, we do not find the picture quality poor enough to mentally remark upon it.

If we were to see a newspaper picture projected as a slide, however, its lack of quality would be immediately apparent and the lack of acceptable quality would be noticed immediately because we are accustomed to high-quality pictures from slides. It is reasonable then to draw the conclusion that the picture quality we are happy to accept has less to do with absolute standards than conformity with the norm for that particular medium? This, of course, implies a considerable degree of prior mental programming.

Anthropologists tell us that for truly primitive people a two-dimensional representation of a scene is meaningless. The convention of scale does not apply in such cases and a black and white reproduction is a nonsense. This supports the argument that what we see, certainly where reproductions are concerned, is very much conditioned by what we have been educated to accept.

There are many other examples to illustrate that the way in which we respond to stimuli or situations is determined not by the stimuli or situations directly, but by unconscious prior mental programming. For many of us a familiar daily experience is using the escalator at an underground station. Once in a while, as we approach the escalator, we see that it is stationary, and we have to use it as an ordinary stairway. As we step on to the stationary escalator we lurch because we make the same adjustment to our forward motion that we make when the escalator is moving. We do this, despite the knowledge that the escalator is not moving. Our prior programming, acquired over years of experience of using escalators, is clearly a much stronger influence on our behaviour than the current situation. Funnily enough, people who do not regularly use escalators do not experience this particular reaction, but that merely underlines the point that is being made. Our reactions and response to many

Or is it? The author points out how conditioning affects our visual judgments, including our appraisal and acceptance of the pictures we see on the cinema screen and television tube

situations and stimuli are determined more by unconsciously absorbed "education"—prior mental programming—than by the situations or stimuli themselves and, most importantly, we are not normally consciously aware of this.

The extent to which we have been programmed to accept conventions is considerable and the process of programming or education is frequently unconscious. We are not aware of it happening or having happened. In a pictorial sense, a good example of this is the way in which we immediately accept the "rules" of perspective—and they are rules. Many of the art galleries of the world exhibit pictures by Great Masters of the Middle Ages which were painted before the rules of perspective had been developed. Today, however, we all accept the convention of perspective because we have, by constant daily exposure, been educated to do so. However, this particular prior programming can override the evidence of our eyes. For example the accompanying illustration of Escher's "Cascade or Waterfall" serves to show how our acceptance of the convention of perspective makes it difficult to spot what is wrong with the picture.

Another two examples are Escher's "House of Stairs" and Morton's "Fork."

These pictures show quite clearly our inability to see what is there. The pictures satisfy the conventions to which we have been programmed, but each is a nonsense and it takes quite a while to work out what is wrong. Perhaps that exposes another example of prior programming. We automatically expect pictures to be representations of the real world. Can we believe what we see when we look at a picture? We are so programmed that there is a strong inclination to want to believe and provided the picture is what we expect it to be, i.e. it is plausible, we do believe it. It is when a picture contains the unexpected that it worries us and this applies as much to quality aspects as to content.

It is the picture quality considerations that are of particular interest and this is an insufficiently explored area of knowledge. In a paper in the SMPTE Journal*, Ken Lisk of the Eastman Kodak Company used an elegant phrase which stated that "... the television system is designed to just satisfy the visual re-

quirements of the viewer. . . ." One cannot help but wonder to which particular system or viewer he was referring. After all, many people are delighted with the picture quality they get from a 1/2-inch or 3/4-inch video cassette, even though these are considerably below accepted broadcast standard.

What then determines acceptable picture quality?

There is a story, apocryphal no doubt, attributed to the then Lew Grade who, when advised by an engineer that a programme he had purchased was not of transmission quality, simply asked, "Who cares about the picture quality if the programme is good?" That philosophy contains a large element of truth. To some extent our requirement for picture quality is inversely proportional to our interest in the picture content. It also explains why many people think their video-cassette pictures are marvellous: they made them themselves.

Therefore, acceptable picture quality depends to some extent on our interest in the picture content, but also on our nor-

mal expectations for the particular reproducing medium. This latter aspect is something to which we have been educated or prior programmed. Conformity with the prior programmed norm for the medium seems to be far more important than absolute parameters.

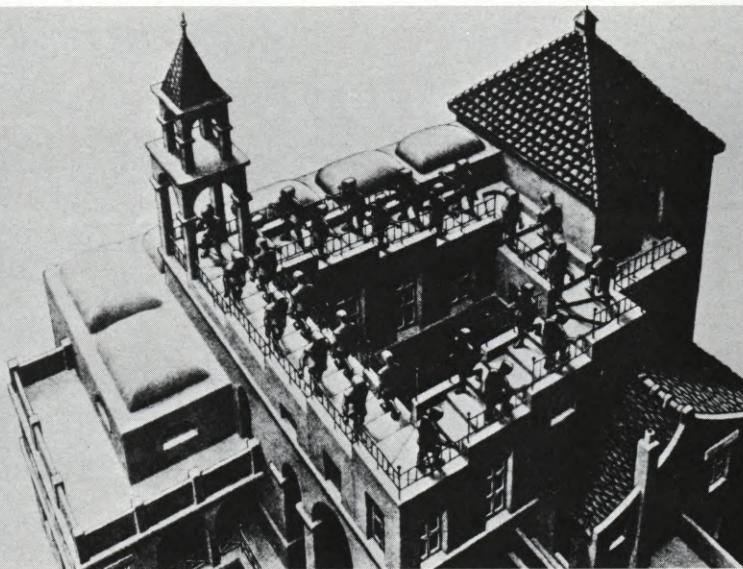
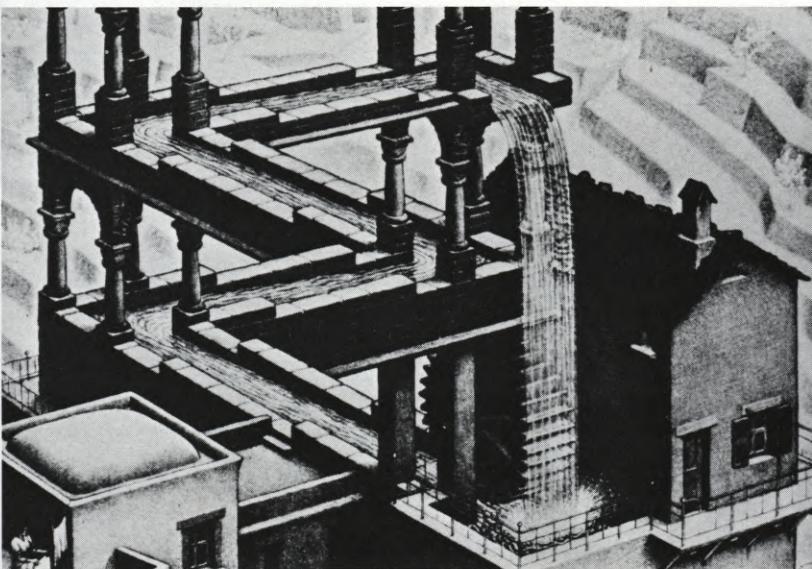
We are all conditioned to accept, for example, that in the cinema rotating wheels tend to go backwards. It does not mar our enjoyment, nor indeed detract from the illusion of reality, but if anyone today were to propose a new moving picture reproduction system in which normal directions of motion were rendered backwards, he would have great difficulty finding development finance.

In the early days of cinema, recognisable moving pictures were, in themselves, such a remarkable achievement that all sorts of minor shortcomings of the medium were reduced to total insignificance. People did not stay away from the cinema because the pictures flickered, were tonally distorted, were silent, were black and white and had peculiar movement rendition. Those people

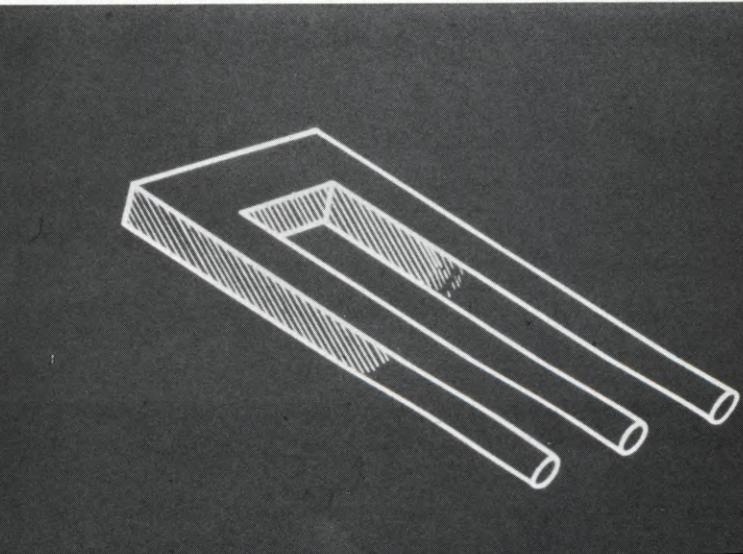
and succeeding generations became educated to accept what was the norm for cinema reproduction. Of course, the norm for that medium has improved considerably over the years, but very little, if any, of the improvement came about because of public demand. The improvements were prompted by those working in the industry.

Similarly, with television. Would the growth of television in society have been less rapid and extensive if technical standards had remained where they were, say immediately after the war? That is a question that is impossible to answer with any certainty, but, on available evidence, the probability is—yes! It is generally accepted that the technical standards of television in the United States are rather lower than those obtaining in Western Europe, but this does not seem to have restricted the growth of television in the former country. By the same token, there are no indications that when a television service switches to colour, the number of viewing households in

Continued on Page 943



At first glance, all of these pictures appear "normal"—but closer scrutiny reveals that they are nonsense anomalies that please the eye, but fool the mind. (LEFT) Escher's "Cascade or Waterfall" would have us believe that water falls downward, but can also run uphill. (RIGHT) Another picture by Escher, "House of Stairs", boggles the mind with what is essentially a visual joke. (BELOW LEFT) In this picture the rules of perspective are flagrantly defied. (RIGHT) Morton's "Fork" is not a fork at all, when you examine it closely.

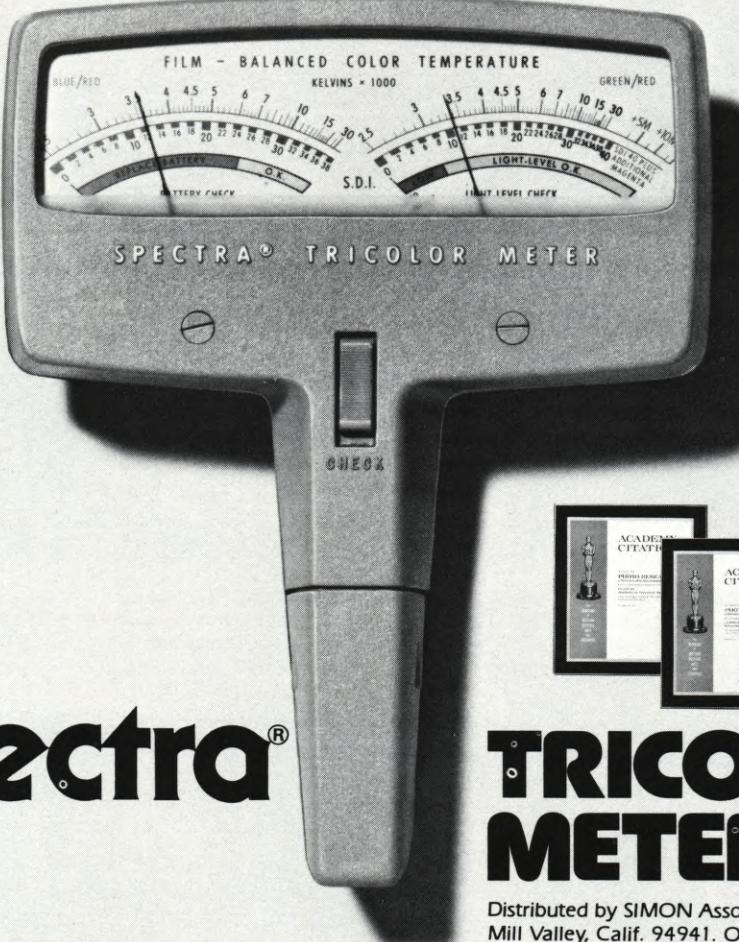


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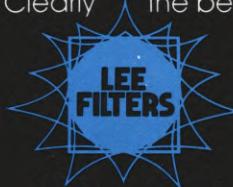
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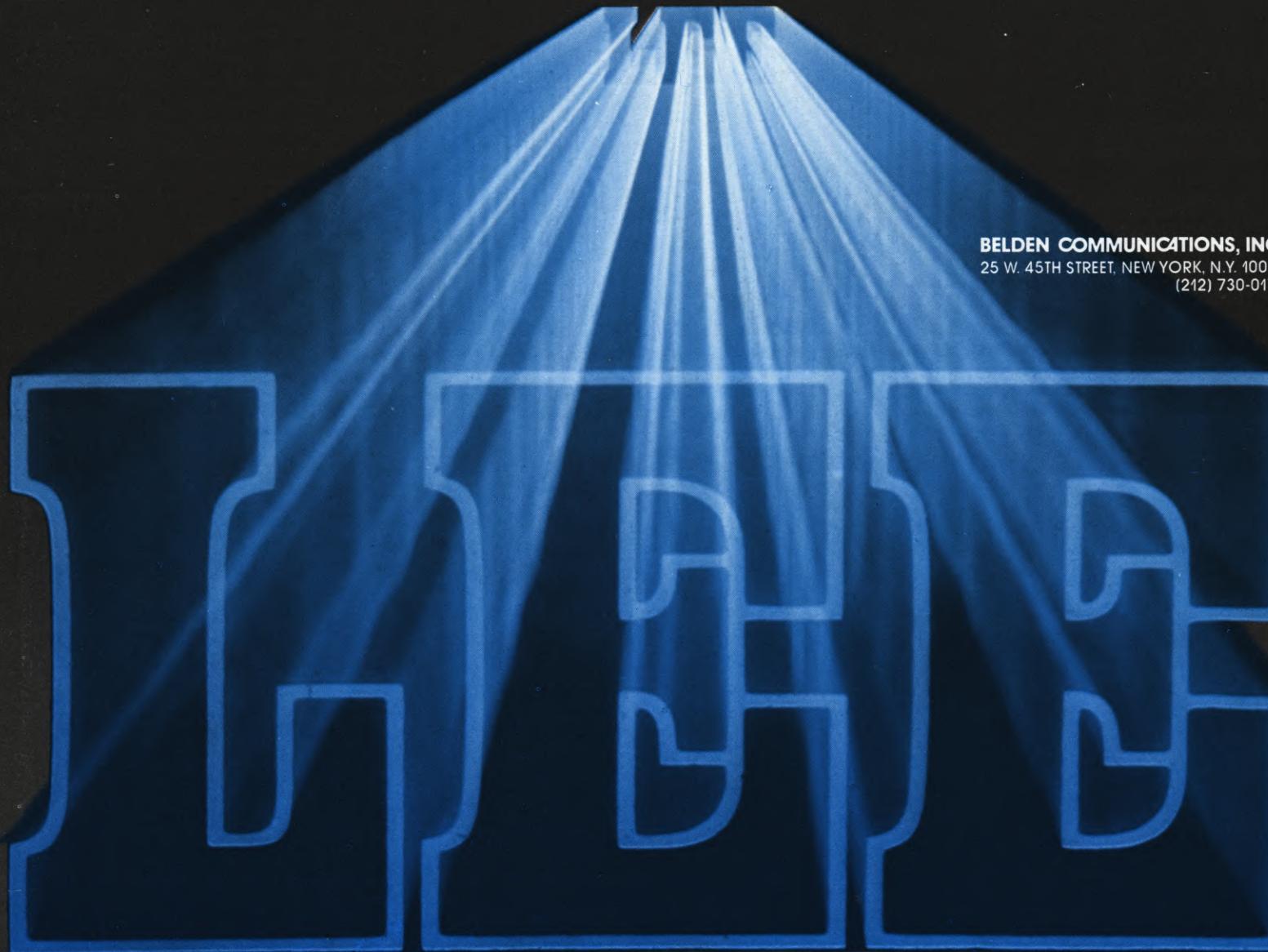
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MODERN TECHNIQUES OF OPTICAL TRICK CINEMATOGRAPHY

Film 79

By ROY FIELD and TONY ILES

What is Optical Trick Cinematography? It is the art of combining two or more images shot independently into one piece of film.

In the very early days of cinematography, film-makers were super-imposing images in original photography by double-exposing the negative to achieve a composite result. These appeared as ghost images, which although very acceptable for certain effects, did not meet every requirement. Gradually, more sophisticated optical effects were dis-

How basic optical illusions are created on film, and the methods of assuring that the most suitable rolls of film stock can be selected to obtain the best possible results in the field of special effects

covered and used. In recent years there had to be an improvement in the techniques used for optical effects, as the quality and resolution of the film, and the sudden increase in screen sizes, made the work of the optical specialist more and more difficult.

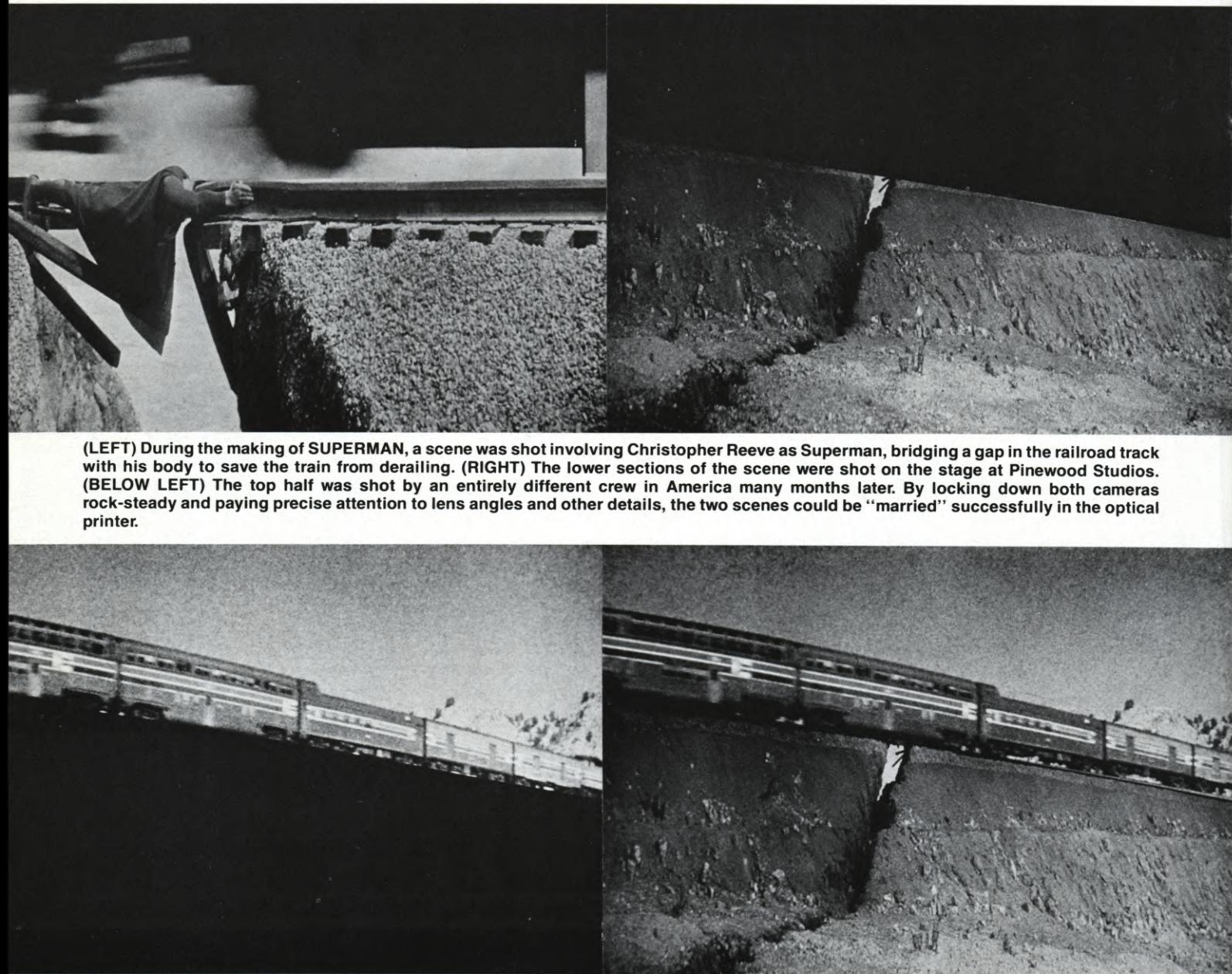
Nowadays, with techniques such as travelling matte, rotoscoping, forcing high contrast mattes for bright objects, etc., it is possible to get more and more sophisticated opticals using the optical printer. With the fine-grain stocks avail-

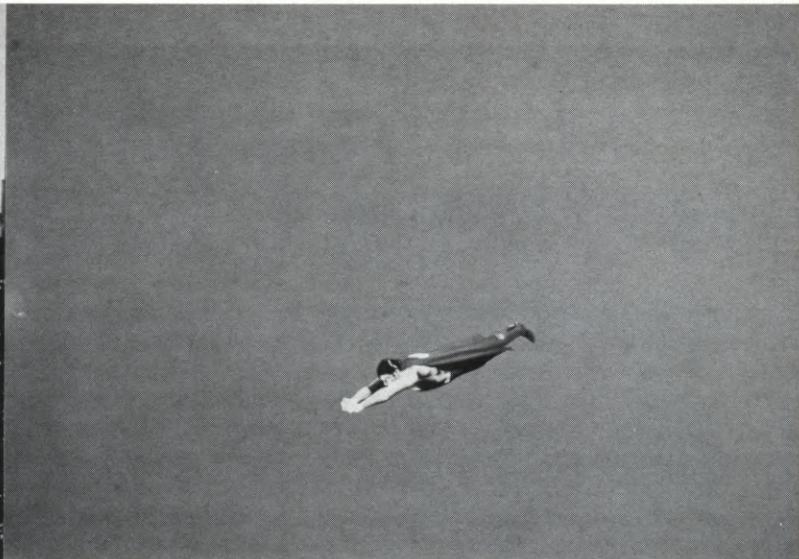
able (both negative and print) and modern high-resolution lenses, improved lens coatings, and projection onto large screens, it has become increasingly important to achieve the highest possible quality duplicate negatives for the preparation of optical special effects.

A fundamental technique in optical trick cinematography is that of the travelling matte. In this, typically, an actor in the foreground can be superimposed on a background scene, in a way that could be

Continued on Page 914

(LEFT) During the making of *SUPERMAN*, a scene was shot involving Christopher Reeve as Superman, bridging a gap in the railroad track with his body to save the train from derailing. (RIGHT) The lower sections of the scene were shot on the stage at Pinewood Studios. (BELOW LEFT) The top half was shot by an entirely different crew in America many months later. By locking down both cameras rock-steady and paying precise attention to lens angles and other details, the two scenes could be "married" successfully in the optical printer.





(LEFT) A fundamental technique in optical trick cinematography is the travelling matte. It was used to produce the illusion of Superman flying over the city of New York, and the progression started with this background scene of the skyline. (RIGHT) Next, Christopher Reeve was photographed "flying" against a special blue background. Great care had to be taken to make the blue of his costume sufficiently different from that of the background so that separation could be achieved.

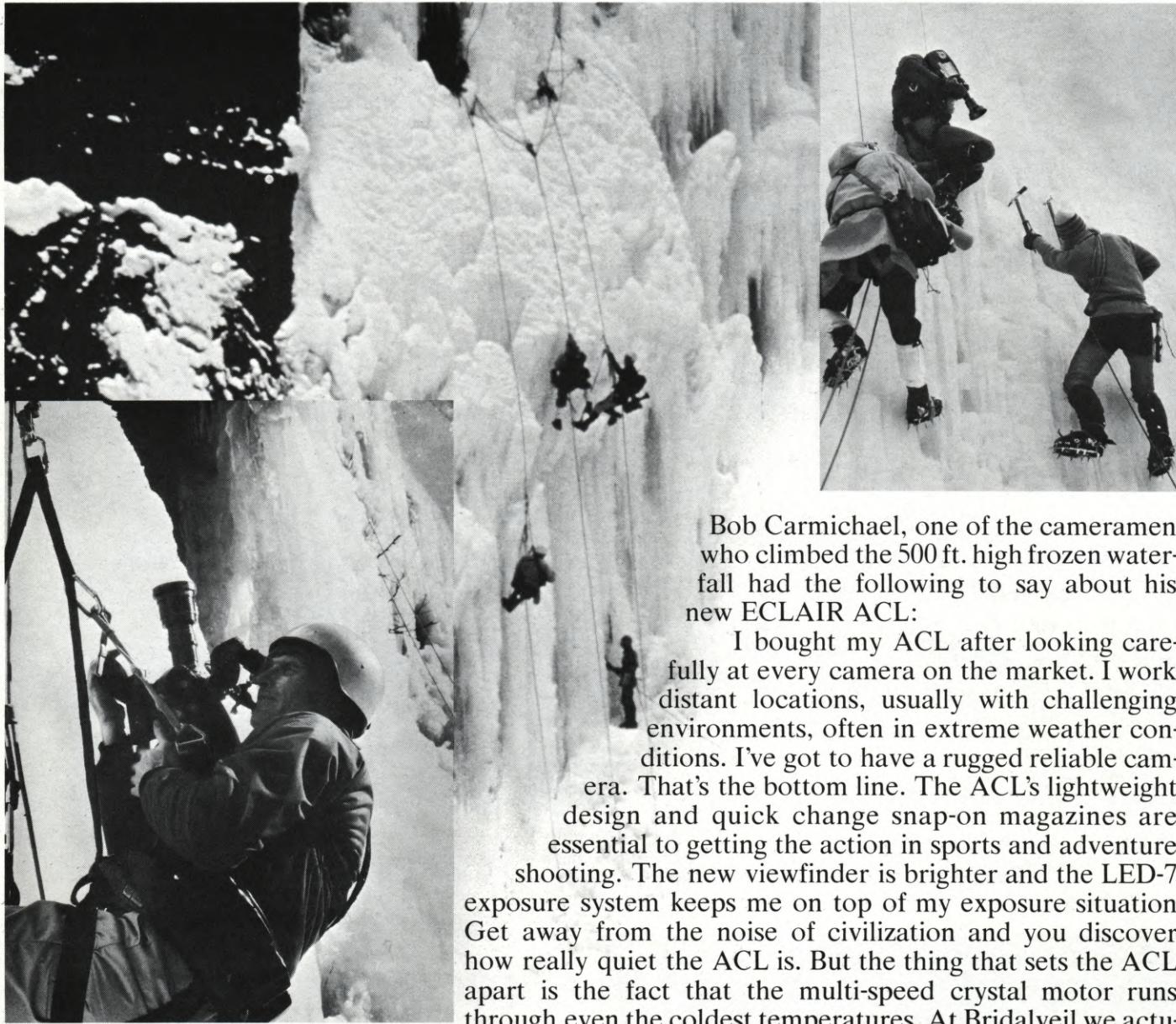


(LEFT) From the shot of Superman against the blue background, an exposure was made to generate an opaque mask, or matte, of the figure against a clear background. (RIGHT) This matte was bi-packed in contact with the background scene of New York and printed onto a piece of internegative film. (BELOW LEFT) The blue background was held back by bi-packing it with a reverse mask, known as a counter matte. (RIGHT) The finished composite optical effect, with Superman printed into the "hole" in the background scene.



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Bob Carmichael, one of the cameramen who climbed the 500 ft. high frozen waterfall had the following to say about his new ECLAIR ACL:

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For many years Samuelson have had a single Astro Multi-Image lens outfit which has always been in great demand by cameramen seeking to shoot 'in camera' various effects which otherwise would be both expensive and time consuming to achieve on an optical printer . . . even to those simplest of all effects, reversing a shot from left to right or turning an image upside down and rotating it about the optical axis.

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C1, C2, C3, C4 and C5 are five 100 mm dia multi-image systems incorporating a number of individual 'negative' lenses which are used in conjunction with a single 'positive' lens (CO). With these systems it is possible to achieve 9 images set out like a telephone dial, 60 images set out in a checkerboard pattern, 5 images set out cruciform, 9 images set as a 3 x 3 square or 7 images set parallel.

The D1-D7 series are 60 mm diameter multi-image pyramid prisms giving 2, 3, 4, 5 or 6 images arranged radially with and without a clear central area.

The systems which have a clear central area are particularly exciting when used with a zoom lens which has a small enough front diameter to be covered by the multi-image lens. For instance, with the new Samcine 18-100 mm 35 mm type wide angle zoom lens or with virtually any 16 mm type zoom lens, it is possible to use, say, the D1 'telephone dial' element and by starting a shot on the long end of the zoom range see only a single image and then zoom back to reveal a number of similar images set around the central one. With the motorised drive the outside images can be made to rotate about the central one which remains still. For product shots, etc., the effect can be very, very eye catching.

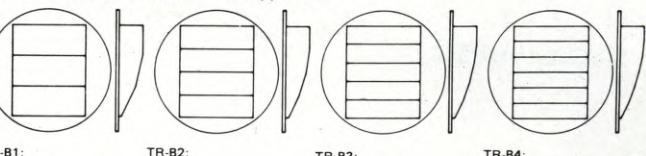
As if all of that is not enough we have some outfits of 'Screw-On' multi image lenses, which are quite different.

This set are all 77 mm diameter pyramid type prisms which we supply with various adaptors for direct attachment onto the fronts of suitable lenses. 'Suitable' lenses include all the 16 mm and 35 mm type Zeiss high speed lenses (the 50 mm 35 mm type and the 25 mm 16 mm type are particularly suitable) the Zeiss 10-100 mm and any zoom which has a screw thread filter holder for a Series 9 filter (Angenieux 10 x 12 mm etc.) and quite a few others.

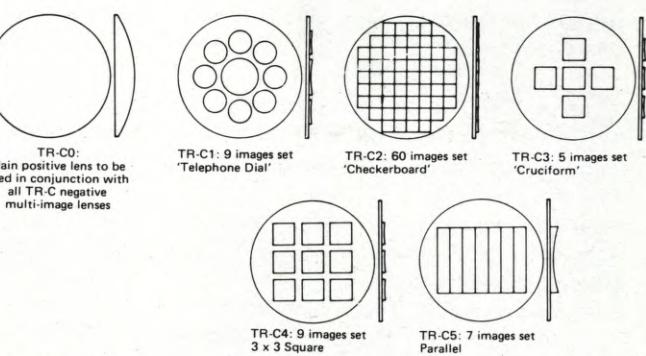
The Screw-On multi-image lenses are a set of 9 viz:

SO-1 gives 3 images set radially, SO-2 & 3 give 4 and 5 radial images respectively together with plain central areas, SO-4 gives three parallel images, the central one being plain, SO-5 is half plain half multiple parallel images, SO-6 gives 2 images with one section clear and the other a plus diopter giving dual focussing at infinity and at 5 inches or one part in focus and the rest way-out, SO-7 is a two image double diopter giving focus at 10 inches or closer and SO-8 & 9 are multi prisms similar to SO-3 & 4 but multi-coloured.

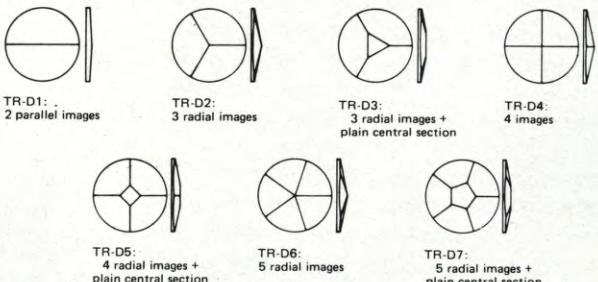
Astro Multi-Image Lenses
Type TR-B, 100 mm dia. Polyprisms



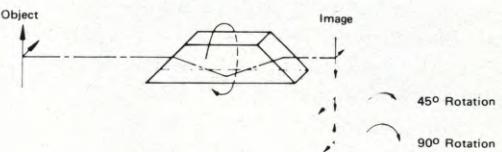
Type TR-C, 100 mm dia



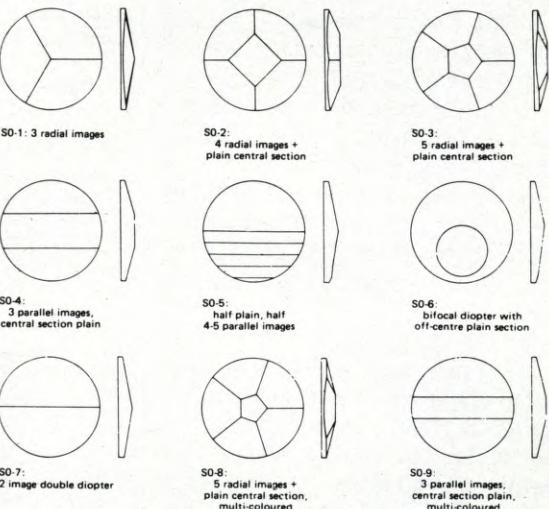
Pyramid prisms
Type TR-D, 60 mm dia.



Dove Prism



Screw-on Multi-Image Lense 77mm diameter



EUROPEAN MANAGING ASSOCIATES FOR
PANAVISION®
Corporation of California Ltd

THE NEW ARRI IMAGE STABILIZER SYSTEM

Film 79

Sneak-previewed to a chosen few at *Photokina '78* (but only in terms of a video cassette showing what it can do), the new ARRI Image Stabilizer came all the way out of the closet at *FILM '79* and created something of a sensation in its own understated way.

Formally introduced by Arnold & Richter Marketing Manager Horst Bergmann by way of a paper entitled "A New Approach to Image Stabilization", the device remained on display in the equipment exhibition area throughout the duration of the conference, along with the aforementioned demo reel (this time on film), showing a young camerawoman using it while filming hand-held from cars, boats, helicopters and on horseback.

To be sure, there is nothing new about seeking to stabilize a motion picture camera image and free it from vibration under jerky or bumpy conditions, and quite a few devices have been developed toward this end. Varying greatly in size and cost, these devices operate on different principles and some of them have highly specialized applications. Each also has its limitations, due to size, sensitivity, focal length of lenses that can be used, or the frequency of vibrations it is best adapted to dampen.

Devices of this sort which have been in service for the longest time in the film and television industries, proving their dependability along the way, are mainly those fixed appliances designed to be mounted securely to helicopters and other moving vehicles. The Tyler and Continental mounts are prime examples of this type. Closely allied to these are the gyroscope-stabilized platforms, such as those designed by Tyler, which are mounted as units onto various moving vehicles and which accommodate the entire camera equipment. While all of these devices function admirably well, they share the sole drawback of being quite large and bulky—in no way practical for stabilizing the movement of a hand-held camera.

In a second category are mobile stabilizing rigs, such as the Steadicam and Panaglide, which involve pendulum suspension of the camera on a spring-compensated gimbal joint system. The cameraman is strapped into this rig so that his body literally becomes a functioning element of the device. While these devices are certainly more mobile than

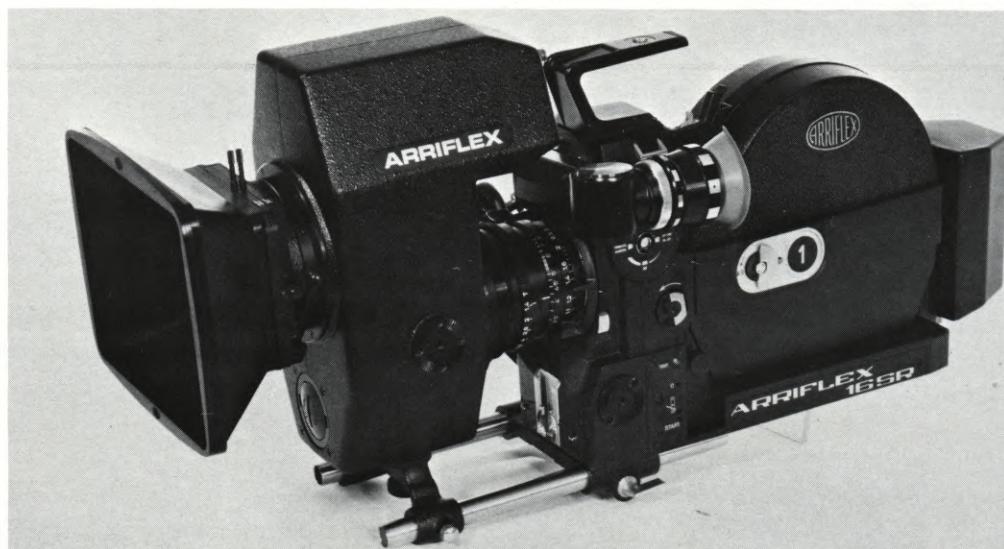
the aforementioned solidly mounted stabilizing platforms, they are still quite bulky in configuration and require the services of a rather highly trained operator.

A third category of stabilizing appliances achieves its objective by optically compensating the image forming rays. This does not involve stabilizing the entire camera, but is achieved by means of an additional unit attached to the camera lens. In one type of such appliance, the Dynalens, compensation is affected by means of a liquid prism which is controlled by an electronic gyroscope system to deflect the path of the light rays. The latter system requires that its electronic components be constantly fine-tuned by a specialist.

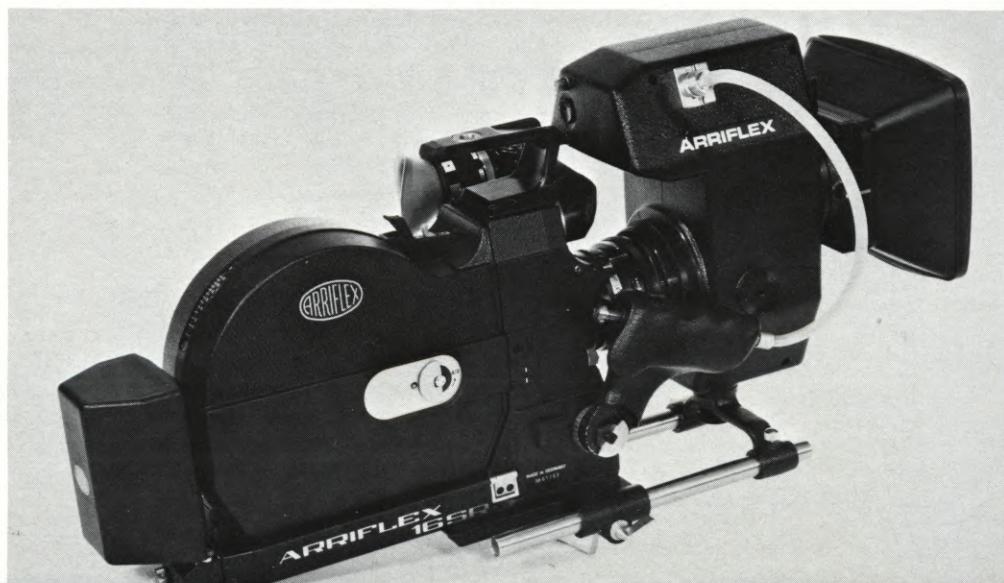
A new lightweight, compact device from Arnold & Richter, which fits in front of the taking lens and effectively smooths out vibrations for hand-held shooting with film and TV cameras

The new Image Stabilizer introduced by Arnold & Richter differs in design and function from all of the aforementioned systems, although, like the latter, it does achieve stabilization by means of an auxiliary optical system placed in front of the taking lens. However, the device itself is an autonomous system to be applied to a wide range of cameras (both film and TV) and taking lenses.

The unit is distinguished by its light-weight construction and compact silhouette, both characteristics rendering it a convenient and unobtrusive device for hand-held filming. In actuality, it can be used with or without a tripod and in nearly every mobile filming situation on land, in the air, from a waterborne craft, or even when sitting on the back of an animal. It is



Two views of the new Arriflex Image Stabilizer System shown mounted on an Arriflex 16SR camera. The device is not restricted to use with Arriflex cameras, but may be used on almost any film or TV camera. The heart of the system is a British Aerospace gyroscope, which consists of a two-axis gimbaled free gyroscope that carries a mirror mounted on a third gimbal.



equally suited for TV or film shooting, with both 16mm and 35mm cameras.

A TV viewing system is not an integral part of this unit, nor is it necessary as it is with the Steadicam and Panaglide systems. The decision as to whether a video viewfinder or monitor system should be used in conjunction with the unit is a matter of choice dependent on the cameraman's judgment, plus the demands of the particular shooting situation.

Aside from its obvious function in stabilizing the image, the system is designed to facilitate freer use of the camera, since it functions without electronic controls, requires no external power supply and needs no special lenses. The new ARRI Image Stabilizer is mounted in front of the camera lens, like a matte box, and sunshades and filters can be attached to it.

The main component of the new stabilizing system is a British Aerospace gyroscope, which consists of a two-axis gimbaled free gyroscope that carries a mirror mounted on a third gimbal. The mirror gimbal is pivoted within the outer gyro gimbal about an axis parallel with the inner gyro gimbal. The mirror and the inner gyro gimbal are coupled by a linkage which gives an effective ratio of 2:1 between them.

The position of the mirror on its pivots is set so that when the gyro gimbals and spin wheel are orthogonal, the mirror is at 45 degrees to the outer gimbal axis. The camera is set so that it looks along the outer gimbal axis into the mirror, to see the view that lies along the direction of the gyro wheel. Because this direction tends to be stable, the picture seen by the camera is stable. However, since the cameraman must be free to pan or tilt, the gyroscope must be precessed in the desired direction. This has been done by a means which does not change the established method of panning cameras.

A movement of the camera in a certain direction causes a friction mechanism to precess the gyro wheel in the same direction. This means that the gyro, and hence the direction of the field of view, is loosely coupled to the camera body. Move the camera body slowly or steadily and the field of view follows. Move it quickly or through narrow angles and it tends to remain stable in the original spatial direction. While panning, the direction of the field of view lags behind the direction in which the camera body is pointing, but this is not apparent to the operator, who is using a viewfinder which looks through the lens.

The complete mirror system, together with its electrical motor, is housed in a relatively small unit. The entrance and exit ports for the image rays are sealed dust-tight by means of two optical flats



The ARRI Image Stabilizing System is very light in weight, weighing only a few pounds, which makes it ideally suited for hand-held use in a variety of situations. The demonstration reel shown at FILM 79 showed a young camerawoman using it, while filming hand-held from cars, boats, helicopters and on horseback.

which can be unscrewed; if necessary, they can be replaced by filters, which can also be screwed on.

The power for the gyroscope motor is supplied by a quickly-changeable, built-in, high-power 1.5-volt single cell battery, such as Mallory MN 1300 or Varta 7232, which last approximately eight hours with average use. As a protective measure, the moveable gyro gimbal is locked to the case when switched off.

The new system functions in such a way as to allow for the simplest possible mode of operation; only the on/off switch for the gyroscope motor and the release for the mirror gimbal must be depressed. When the gyroscope motor is switched on, a red lamp indicates the acceleration of the gyroscope. This reaches its rated speed after 15 seconds, at which time the red lamp goes out and a green light signals that the unit is ready for shooting. With Arriflex cameras the mirror is automatically "uncaged" by means of the cable release attached to the camera switch. This, when operated, simultaneously releases the camera running mechanism and the mirror stabilizing system. With other cameras, lacking this link-up, the mirror must be uncaged shortly before switching on the camera. It is advisable to leave the gyroscope motor running during short breaks in shooting, as more power is needed for the gyroscope run-up than for maintaining its speed.

Another characteristic of the new system worth mentioning is its capability for being used in the horizontal, as well as the vertical, position. Since it is espe-

cially necessary with wide-image covering angles to bring the unit with the mirror system as near as possible to the front of the taking lens, it can be advantageous, depending upon the camera used, if one can choose the position of the mirror system which allows the shortest distance from the taking lens. On the other hand, it can be useful, when using a narrow film camera such as the Arriflex 16SR, to be able to film with the unit in the vertical position. For example, when shooting inside vehicles, it is advantageous to have a camera which occupies the least possible amount of space. When panning the camera, the resulting centrifugal

Continued on Page 944

The Image Stabilizer is shown here mounted vertically, but it can also be mounted horizontally on occasions when that configuration is deemed to be preferable.





Shooting a documentary: quick moves. Camera rests comfortably on Mr. Fauer's shoulder as he hand-holds with tripod attached.

Hand-holding with the tripod on the camera! Jon Fauer talks about working with a Sachtler:

The effect on documentary style of a 6 1/4 lb. fluid head and carbon-fiber 58 inch legs that weigh 2 1/4 lbs.

When the action isn't going to repeat and it's happening fast, you often have to go hand-held," says documentary cameraman Jon Fauer.

"But you give up a lot, of course. No steady long-lens closeups. No throwing the background out. Even staying wide, the image isn't really rock steady on a big screen. All these things you sacrifice for speed."

"I bought the Sachtler because of its incredible light weight with the carbon-fiber legs. After I began using it, I found I could make quick moves to a new angle carrying tripod and camera together. The Sachtler was the first tripod that didn't slow me down."

"The quick-release plate lets me go hand-held fast—and with the ARRI SR on my



"We spend half the time carrying the equipment around," says Jon Fauer. "Weight is important."

shoulder, the plate doesn't dig into me. I find I can put the camera back *onto* the Sachtler faster than I could with any other tripod."

"Using my SR on other fluid heads, I was always fighting the counterbalance spring. Too much or too little. The Sachtler's adjustable spring gives me perfect neutral balance—with my 400mm and my Zeiss Superspeeds."

"The SR's tripod socket is fairly far forward on the base, and the Sachtler's quick-release plate is small. That's why it doesn't dig into my shoulder," says Mr. Fauer.

"The head is small, too. And this led to something I wouldn't have believed. In the heat of the moment, I found myself needing a hand-held shot *fast*. So I began hand-holding—with the tripod still attached! I forgot it was on there."

Who took the photos on this page—and why is that significant?

On this job, there was a two-man crew: Jon Fauer, cameraman, and his assistant, Jeff Laszlo. Usually, the assistant has his hands full carrying the tripod around two steps behind the cameraman. As you can see, Mr. Fauer carried camera and tripod himself. The pictures were taken by Mr. Laszlo.

sachtler
SUPPORT SYSTEMS
ARRI
ARRIFLEX CORPORATION

One Westchester Plaza, Elmsford, New York 10523. (914) 592-8510. And 600 N. Victory Blvd., Burbank, Calif. 91502. (213) 841-7070

Where to see Sachtler equipment on display now:

Listed alphabetically below
are some ARRI dealers in
whose showrooms you can now
inspect Sachtler tripods.

Adolph Gasser Inc.
5733 Geary Blvd.
San Francisco, Calif. 94121
(415) 751-0145

Alan Gordon Enterprises
1430 N. Cahuenga Blvd.
Hollywood, Calif. 90028
(213) 466-3561

Atlanta Film Equip. Rentals
1848 Briarwood Rd. NE
Atlanta, Georgia 30329
(404) 325-3676

Brenner Cine Sound
5215 Wisconsin Avenue NW
Washington, DC 20015
(202) 244-3800

Camera Mart Inc.
456 W. 55th Street
New York, New York 10019
(212) 757-6977

Film Equipment Rental Co.
707 11th Avenue
New York, New York 10019
(212) 245-4800

Glazer's Camera Supply
1923 3rd Avenue
Seattle, Washington 98101
(206) 624-1100

Jack Pill & Associates
6370 Santa Monica Blvd.
Hollywood, Calif. 90038
(213) 466-3471

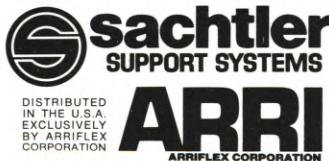
Otto Nemenz Internat. Inc.
7531 Sunset Blvd.
Hollywood, Calif. 90046
(213) 874-0811

Roessel Cine Photo
48-20 70th Street
Woodside, New York 11377
(212) 424-1600

Victor Duncan Inc.
200 East Ontario Street
Chicago, Illinois 60611
(312) 321-9406

Victor Duncan Inc.
2659 Fondren Drive
Dallas, Texas 75206
(214) 369-1165

Victor Duncan Inc.
32380 Howard St.
Madison Hts., Mich. 48071
(313) 589-1900



AÄTON 8-35 CAMERA Continued from Page 922

foot magazine or a 400-foot magazine. The magazine is very light because there is no mechanism in it. The automatic adjustment means there is no problem with friction when you are using a 200-foot magazine, a 400-foot magazine or a 1000-foot magazine.

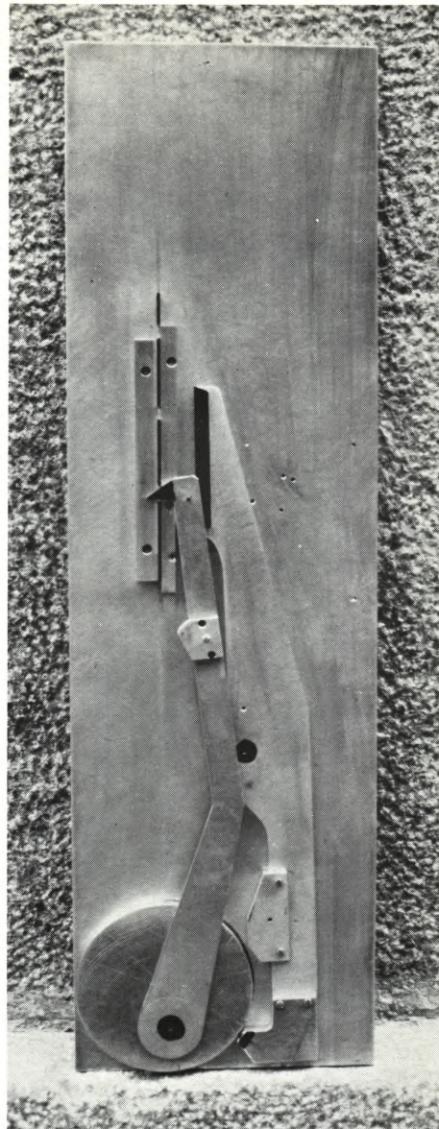
The movement includes no registration pin, which many people would regard as an error in design. However, we have proven in our 16mm design that the camera works far better than any other system without any so-called registration pin, because the claw movement pulls down the film in a highly linear way, with no bow effect on the film performance. This principle of obtaining a linear stroke is the reason why the camera has such a high degree of stability. The steadiness of the Aäton 8-35 camera does not suffer at all when compared to that of other well-known cameras.

In order to complete the prototype of the Aäton 8-35 as fast as possible, we had to use a beam-splitter system, but it is quite evident that we will have a rotating mirror system in the production models. We have room for it and the shutter, in fact, is in the shape of a rotating mirror, but for the sake of speed and simplicity we installed a beam-splitter in the prototype. This has resulted in a 30% loss of light.

In order for the claw to have enough time to enter the perforation and effect a gentle pulldown, we adopted the 153-degree shutter. This shutter, together with the beam-splitter, results in a one-stop decrease in exposure. A beam splitter is quite fragile and that is the main reason why we will replace it with a rotating mirror.

The main request from Jean-Luc Godard was for a very, very steady camera—one that would match with the Panaflex camera, because eventually he wanted to employ both cameras, using the Aäton 8-35 for getting into very difficult places. Definition and steadiness were his main concerns, so we were obliged to make a basically quiet mechanism. Most quiet 35mm cameras are now described as "self-blipped", but the Aäton 8-35 is not a self-blipped camera. It is a quiet camera without a blimp. With a self-blipped camera you have a basically noisy movement and you have good reason to dampen all the noise and eliminate the output of internal noise, but you still have vibration in the camera and vibration is not good for definition. So with our basically quiet camera, we have better definition than a self-blipped camera.

Without any blimp at all it will not be



Steadiness is ensured by the same claw movement system (U.S. patent 3806016) that has worked so successfully in the Aäton 16mm LTR camera. Pulldown of the stroke is absolutely linear.

possible to reach 21 dB or 23 dB for quite a long time. We are now at 35 dB, but on the production model we will be able to reach 30 dB, or perhaps 29 dB. The 30 dB level would be quite comparable to that of self-blipped cameras with a lens blimp on the lens.

In the case of the Aäton 8-35, the noise comes mainly from the magazine, so if you put a very soft blimp over the magazine, without anything over the lens, I feel that you will be able to run the camera at 28 dB, which is quiet enough for most film work.

The first prototype of our Aäton 8-35 will be used by Jean-Luc Godard to make a long feature film, starting in September.

For further information concerning the new Aäton 8-35 camera, please contact:

Aäton SA; 2, rue Président-Carnot; BP 104 Cedex/38001 Grenoble; France (76) 42.64.09.

THE NEW LEONETTI-WILCAM ULTRACAM-35 CAMERA

Film 79

Previously shown only to members of the American Society of Cinematographers at a recent dinner meeting of the Society, the new Leonetti-Wilcam ULTRACAM-35 camera made its auspicious debut at FILM 79.

What follows is the manufacturer's description of the equipment:

ULTRACAM-35 fits the expectations that the name implies. This all-new silent studio/hand-held 35mm motion picture camera was designed and constructed from its inception with the combined facilities, knowledge and experience of Leonetti Cine Rentals, Wilcam Photo Research and consulting opinions of cameramen, operators, and assistants in the industry.

Since 1955 Leonetti Cine Rentals has been a service and manufacturing oriented company within the motion picture industry, pioneering in and maturing with all areas of modern cinematography, along with being the forerunners in the development and manufacturing of lighting, grip and sound equipment. Leonetti Cine Rentals was the first organization in the development and use of complete film location packages.

Because of the new demands in the film industry, a new production camera was needed to fill the requirements of modern-day needs. Leonetti Cine Rentals found in the company of Wilcam Photo Research the unique combination of thirty years of experience in the field of film production, advancements in electronics, and optical and mechanical engineering that made it possible to

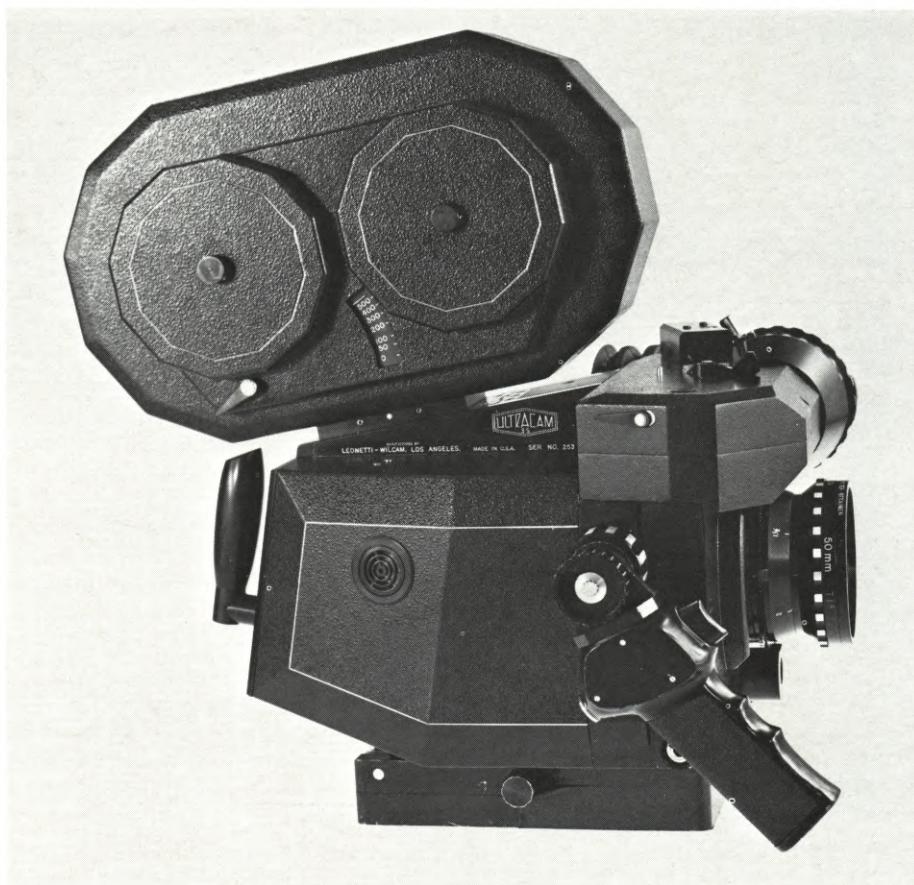
First public showing of an all-new silent studio/hand-held motion picture camera which is designed "to set new industry standards"

develop the ULTRACAM-35. Consequently, the decision was made to start from the beginning, rather than try to patch from the present designs. In the development process, twelve patents or patents pending, have resulted.

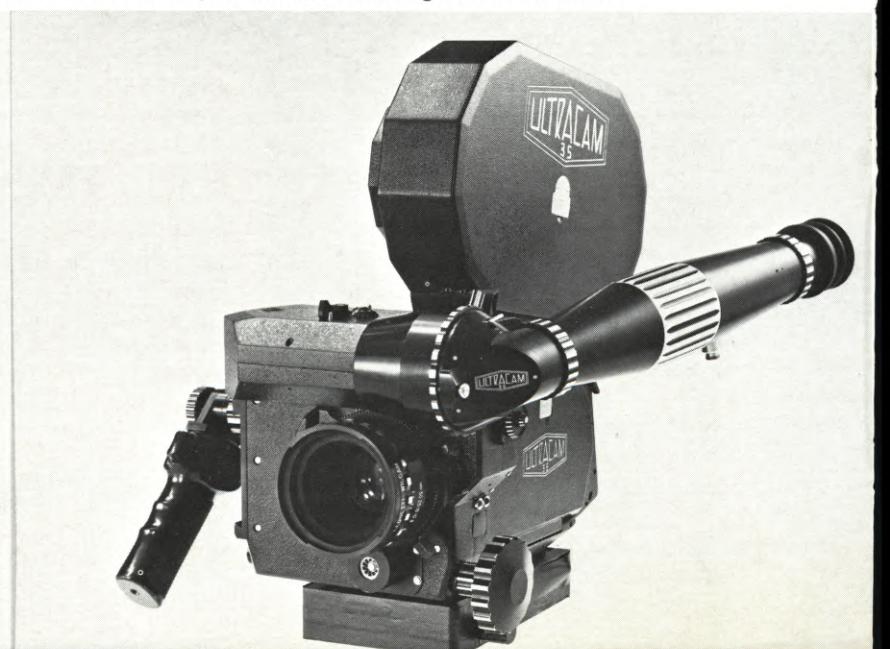
We believe the ULTRACAM-35 will set new industry standards in sound levels,

viewing systems, ease of operation, dependability and the luxury of being able to accept the full range of lenses that have been manufactured in the past or present that many cameramen require.

ULTRACAM-35 becomes the producers' complete camera system, as it allows the use of today's fullest ad-



(ABOVE AND BELOW) Various views of the new Leonetti-Wilcam ULTRACAM-35 camera, which is not an adaptation of existing designs, but rather an all-new concept, backed by twelve patents or patents pending. The camera's development is the result of collaboration between Leonetti Camera Rentals and Wilcam Photo Research. It has already been used in filming several features.



vanced developments, such as the Technovision anamorphic lens system. The name Technovision speaks for itself: Francis Coppola's *APOCALYPSE NOW*, *THE GREEK TYCOON*, Walt Disney's *THE BLACK HOLE*, Warren Beatty's new film presently being filmed in Europe, and many others used this system.

ULTRACAM-35 is the cameraman's camera in providing ease of operation, reliability and adaptability, the requirements that are demanded of the international film-making industry.

The remarkable result of ULTRACAM-35 is not merely advancement in one or two aspects of performance, but in every facet from efficiency of production time to quality on the screen.

Frank M. Leonetti
Geoffrey H. Williamson

Specifications of ULTRACAM-35

FORMAT:

35mm full aperture .736 x .985

MOVEMENT:

Single-claw, double registration pin, compensating link. Using tungsten counterbalance for minimum possible vibration. Automatic film location by spring-loaded pin, brought into film path as registration pins are retracted. Registration pins are automatically released when camera is started. Pitch adjustment compensated for 3x more change in stroke length at end of stroke than at start. Entire movement can be released by two screws, and removed for cleaning. Coupling is keyed for correct alignment on replacement.

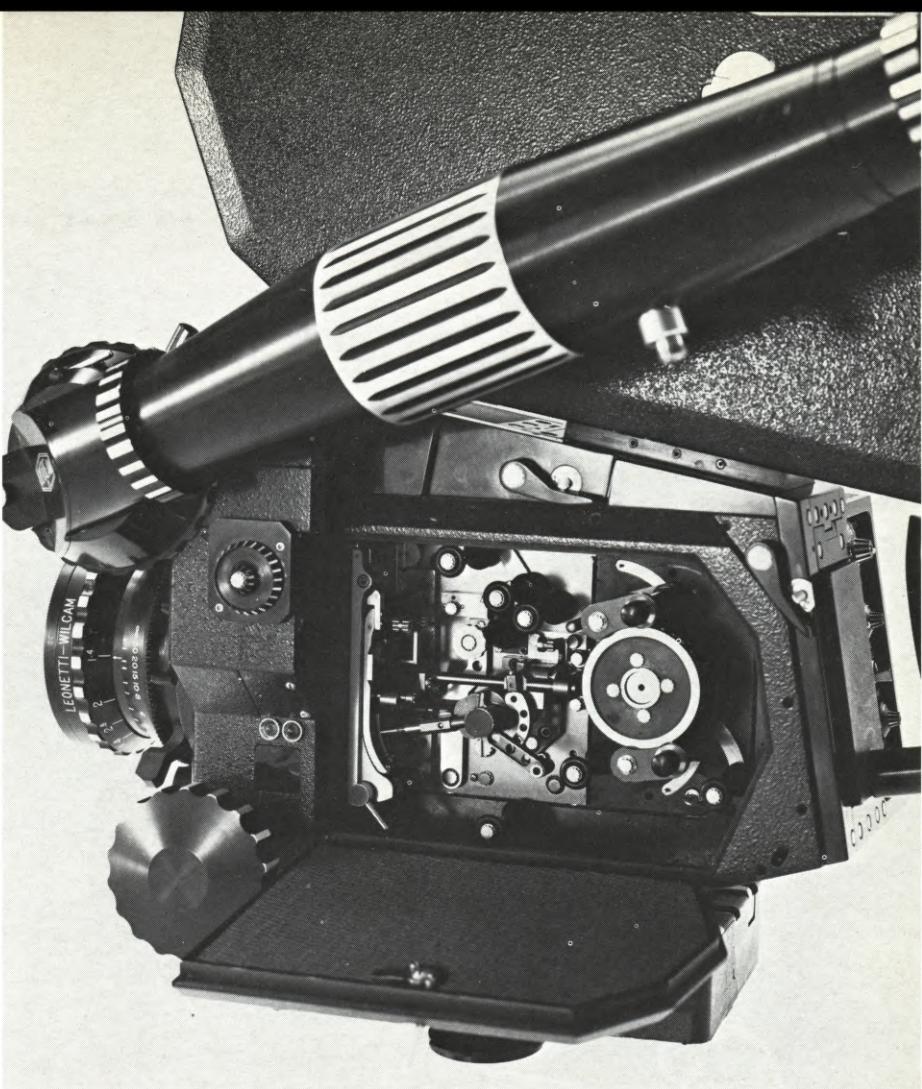
SHUTTER:

2-blade 1/2-speed rotating mirror shutter, with reflecting surface and focal plane cutting blade in one unit on a single shaft. Maximum equivalent angle 175°, minimum 45°, infinitely variable electrically. Angle is variable while it is running, using limited angle torquer. Reflex viewing angle is 41°30' instead 45° to accommodate short back focus lenses.

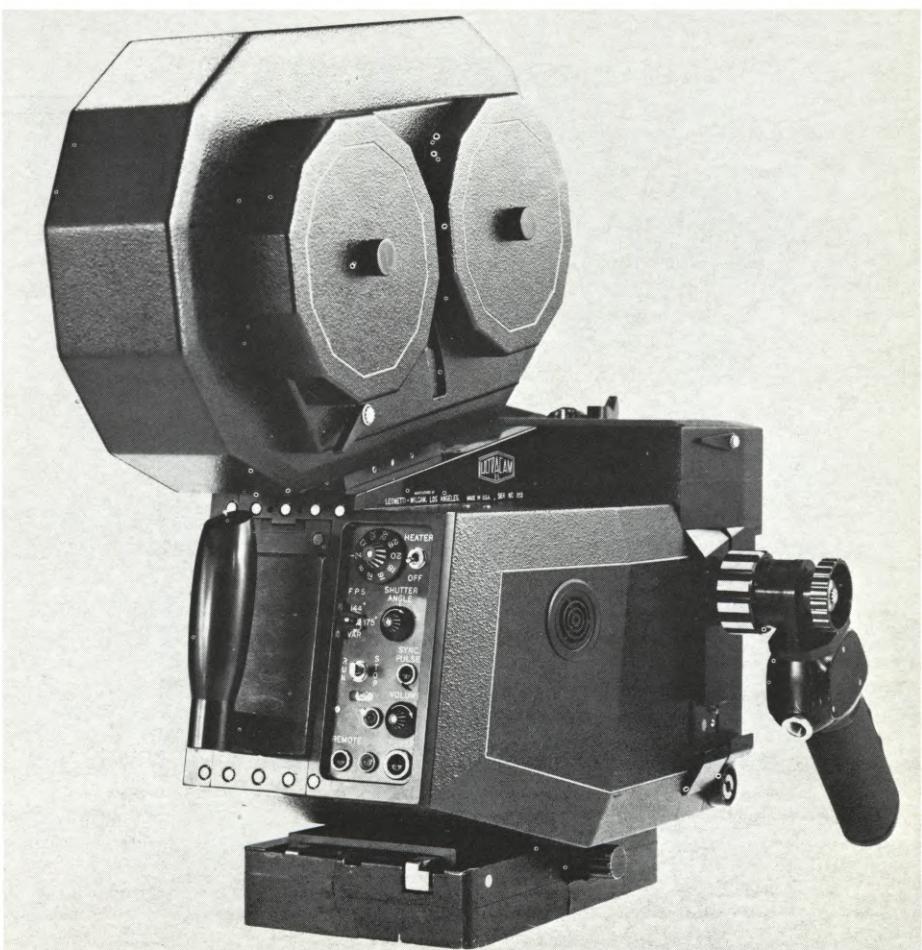
VIEWFINDER:

Eyepiece rotates through 360°, using Pechan prism to maintain continuous upright image, for behind camera viewing. A unique mechanism is incorporated, allowing Pechan prism to be independently rotated. This feature enables operator to always view an upright image. All first reflecting surfaces are enhanced silver, approximating 99% reflection. All air-to-glass surfaces use a high-efficiency coating averaging less than .25% reflection from under 400 to over 680mm. Exit pupil size of entire system is 10mm. Standard magnification is 6x and a true

Continued on Page 918



The ULTRACAM-35 features a single-claw, registration pin, compensating link movement, using tungsten counter-balance for minimum possible vibration. Entire movement can be released by two screws and removed for cleaning. (BELOW) All magazines have built-in torque motors for take-up. Torque is controlled by spring-loaded arm in camera body.





To shoot Huey landing on sandbank, 16SR was wrapped in plastic bags. Camera crew shooting inside copter wore army uniform

so they could be in other camera's shot. Cameramen often shot over machine-gunned shoulders. Ejected cartridge cases

would fly through frame; noise of gunfire so close would cause cameramen and camera to flinch, adding to realistic look.

How and why part of "More American Graffiti" was shot in 16mm using the Arriflex 16SR:

The Vietnam sequence needed a combat footage look. To create that *controlled* illusion called for some unorthodox techniques and skills.

Bryan Anderson floats 16SR as he follows running soldier, for unrehearsed combat-footage look. "With the SR's closing eyepiece," he says, "I could begin or end a

shot like this with my eye at the finder. People were at first a little dubious about this way of shooting, until they saw the rushes. After that, they wanted more."



"The original blowup was beautiful," says Editor Tina Hirsch. "During dubbing, we projected the workprint on a 25 foot screen at Goldwyn. The blowup material looked *much too good* — as though it *belonged* with the 35mm footage, especially the multiple-image stuff. To make it look authentic, we had to ruin the quality."

Four formats

More American Graffiti cuts back and forth between four visual formats. One strand of the story was shot with long lenses at 1:1.85. Another was shot wide-angle and anamorphic. A third is multiple images. Those three are 35mm.

Blown up twice

The fourth strand was shot in 16mm and blown up — twice. To make that sequence look more distinct, the footage was first blown up to a 35mm CRI and a timed workprint made. From that, *another* negative was made, optically blown up a further 10%, using camera original stock to gain contrast.

Hand-held dialogue

"Many people think the Vietnam sequence is the best in the film," says Director of Photography Caleb Deschanel. "The gritty quality of the

photography makes you really believe what you're seeing. The whole thing was shot hand-held, including dialogue scenes. We kept reminding Bryan Anderson and Hiro Narita (the operators) that *they* were under fire and in danger."

Grab it and go

"We needed cameras that would let us move fast *and* help us get the best possible 'combat' footage. You can always degrade the image later, as *we* did — but you can't improve the *shot* later. We all felt comfortable with the SR. It seemed really solid. The balance was great. The battery was right on the camera, so you could grab it and go. *Excellent* optics."

One-take explosions

"When we got to shooting the battle scenes and helicopter stuff, we would slate the rolls and just get in there and do it," says Mr. Deschanel. "We tried to keep a full mag in case things got out of hand, but we often ran out anyway. Being able to reload quickly helped us a lot — especially with explosions and difficult helicopter scenes."

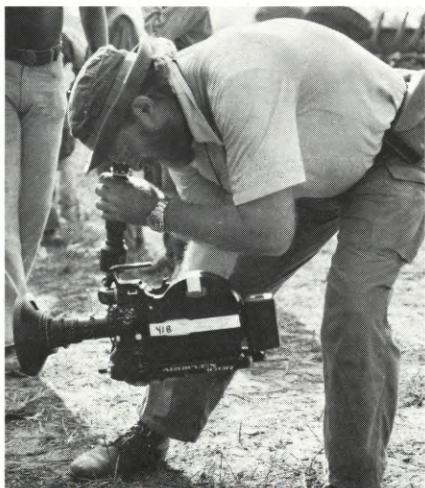
\$2250.00 an hour

"Things were constantly in a big rush," says Writer-Director Bill Norton. "The Huey helicopters were available to us for only three days. In any case, two Hueys plus a Jet Ranger for air-to-air at \$750.00 an hour each..."

Crowd scene

"We shot dialogue scenes *inside* the Hueys, in the air. There would be *two* cameramen (with cameras), the soundman, me, the pilot, an actor and some extras, all in there at once!"

Combat-footage effect called for low angles from behind troops taking cover on ground. Long finder let Anderson walk with SR while keeping lens near ground.



This shot began with Bryan Anderson riding jeep fender. When jeep stopped, he followed Senator (civilian clothes) and Captain as they ran into a bunker. Anderson made many shots while running. If camera bounced noticeably, editor would sometimes put an explosion effect on soundtrack, opposite the image bounce.



Hiro Narita testing balance of Shakicam used in scene described at right. Observing in the background is More Graffiti Director of Photography Caleb Deschanel.

We couldn't have done it in 35mm, obviously. And the two ground battle scenes were shot in one day each."

Unusual style

"Because of Bryan Anderson's documentary background, he really came into his own during the Vietnam sequence," says Mr. Norton. "He would frequently suggest unusual approaches to a scene. Since it was 16mm, I'd say *Go ahead*. He got some very spontaneous-looking stuff."

Change of pace

"One of the two 16SRs we used was my own camera," says Bryan Anderson. "I've used it for documentaries, industrials and commercials. *I didn't expect to use it on a multi-million dollar feature!* We were told to give it an 'immediate' look. That suited me. I had a great time."

Wading backwards

"In one dialogue scene," says Hiro Narita, "Two actors with radio mics crouched, talking, in a river — and then hurried across it under fire. An underwater platform had been built so they could wade thigh-deep. To get the shot, we waded *backwards* in front of them!"

Shakicam

"With the camera on my shoulder, it would have been *too* unsteady and too top-heavy for moving in water. So we used Caleb's 'Shakicam'." (See picture at left.)

Tightrope walker

"I held it like a tightrope-walker's pole in front of me," says Mr. Narita. "Just above the surface while the actors talked, then raising it slowly to waist height as we pulled back across the river. Caleb guided me from behind. The SR with a 9.5mm lens was at the right end, the counterbalance on my left. Interesting effect!"

More American Graffiti
is a Lucasfilm production.

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NOTED AND NOTABLE AT FILM 79

Film 79



NEW BUBBELITE SOFT LIGHT

Cinema Products Corporation introduces a new and unique soft light for motion picture and television field production—the BUBBELITE (U.S. Patent, No. 3,851,164).

The BUBBELITE is a *very soft*, soft light, which provides extremely smooth and uniform illumination. It can be used to fill shadow areas at or near eye-level, or as a key light when feathered, soft and deeply graded shadows are desired.

Extremely lightweight, portable, and easily set up in less than 30 seconds, the BUBBELITE enables the cinematographer or lighting director to achieve true studio control on location, without requiring a truck-load of equipment.

Outstanding Features:

- The BUBBELITE features a uniquely designed umbrella-like reflector constructed of a special fabric. Because of the umbrella's unique curvature in relation to the light source and the reflectance involved, the 1200-watt BUBBELITE provides the equivalent of a 2000-watt throw in a standard soft light.
- Quartz lamps: Each BUBBELITE head uses two 600-watt tungsten-halogen single-ended lamps (Code: BHC/DYS/DYV).
- Power requirements: 120-140 volts AC-DC, 10 amperes.
- Switch: three-position, one lamp on, off, two lamps on.
- Maximum height to lamp center: 10 feet.
- Light source area: 4.125 sq. ft.
- Light intensity at 8 feet: 200 foot-candles (f/4, ASA 100, 1/50th)
- Area coverage from 8 feet: More than 80 square feet.

Each BUBBELITE kit consists of two

complete BUBBELITES (heads, stands and cables), packed in a sturdy, fitted carrying case, and weighing less than 12 lbs.

A complete BUBBELITE kit (less lamps) is priced under \$500.



NEW CONCEPT BATTERY PACK AND CHARGERS

The John Barry Group have had designed a brilliant new range of NiCad battery packs, together with a totally new concept in recharging—something which will be of inestimable value to the film and television industry.

One of the NiCad battery packs, the BARRYPACK 4-30 model, is becoming accepted as the standard new portable lighting system for film and television newsgathering. It offers fully automatic battery protection during charge and discharge. The solid state battery voltage monitor gives continuous indication of the state of the charge, with automatic cut-off.

The BARRYPACK 4-30 has been designed for use with all professional portable battery-operated light heads, 350W, 250W, 150W-30V. It features rapid recharge and matched cells and is ideal for running any 28V DC camera motor.

Currently, 100 of the BARRYPACK 4-30 Model have already been exported to Southeast Asia.

BARRYPACKS (NiCad battery packs) and BARRY CHARGERS (NiCad battery charger incorporating the new Sensomatic pulse charging system) are manufactured and designed in Australia to meet the need for reliable portable power, with both quick-recharging and fast-recharging capabilities.

Quick-charging is only 2½ hours on a fully discharged 2 A.H. battery. Fast-recharging is 30 minutes on a fully discharged 2 A.H. battery.

Both these charging methods incorporate the Sensomatic Pulse charging system, an innovative concept which also offers longer battery cycle life and reduces capacity fading when compared with ordinary constant current chargers.

BARRYPACKS have been specially designed for carrying comfort with light-weight cases in a distinctive red polyurethane, with an adjustable carrying strap.

Both BARRYPACKS AND CHARGERS set a new standard in NiCad battery-packs and chargers and are ideal for all ENG usage, newsfilm cameras and portable light heads.

For further information, contact JOHN BARRY GROUP, 105 Reserve Road, Artarmon, NSW 2064, SYDNEY, AUSTRALIA. Telephone: (02) 439-6955. Telex: 24482.



KRASNOGORSK-3 CAMERA FROM RUSSIA

A precision engineered 16mm Mirror Reflex TTL camera from the USSR supplied complete with a fitted case containing shoulder stock, lens hood, pistol grip, etc.

The f1.9 Meteor lens has a 5:1 zoom range of 17 to 69mm and is capable of producing images to the very highest professional standard. This zoom control is manually operated and very smooth focal length changes are possible using the extension lever supplied.

A powerful spring-wound motor provides a speed range of 8 to 48 f.p.s. and allows a maximum run on a full wind of approximately 20 seconds at 24 f.p.s. The single frame facility, together with a reflex viewing system, makes the Krasnogorsk an ideal choice for creative animation work.

Exposure is controlled 'through the lens' via a semi-automatic meter powered by a standard PX 640 battery.

Useful ancillary features are the locking dioptric viewfinder eyepiece and the

shoulder strap lugs fitted to the top housing.

The quick-release lens mount is a special fitting. No other lenses are available at present. The possibility of using adaptors is being explored.

The KRASNOGORSK-3 camera, for export, is exclusive to Paul Simon Ltd., who provides all service.

For further information, please contact: PAUL SIMON LTD., 2 Market Street Halifax, W. Yorkshire, ENGLAND, Tel. 0422 57442/52240.



THE NEW SONDOR DUBBER M03a-LIBRA

Sondor's main activity these days is concentrating in the field of postproduction equipment and projects for dubbing both video and film productions. Obviously film as well as videotape will be used for TV productions, as one medium complements the other. For sound dubbing it is completely irrelevant and unimportant whether the picture that has to be dubbed originates from a celluloid-film or a magnetic tape. So dubbing of both shall be done with the same equipment in the same rooms by the same staff.

In papers and articles this idea has been spread in certain parts of the world by SONDOR during 1978; with quite a success as a number of new dubbing facilities in important European TV centres have been supplied by SONDOR and been put in operation during 1978 such as Radio Bremen, Suedwestfunk Baden-Baden, RTV Ljubljana and many projects in Europe and Far East are in preparation.

The new SONDOR dubber M03a-Libra is especially designed for this purpose. The patented SONDOR "libra" system—a combination of capstan drive and sprocket drive—allows easy lacing, similar to a standard studio tape deck. Synchronous speed of up to 30 x normal

(750 frames per second), DC-controlled torque motors, sensor-controlled clutch, individual loudspeaker monitors for up to three tracks, very fast spooling, start and stop characteristic of less than 5 milliseconds do allow very short handling times.

Options such as a device to run endless loops from 1 to 10 meters and different ways of prelistening have been developed and shown for the first time during Photokina 78 in Cologne.

The a-libra is available in console or 19" rack for 16mm magnetic film, for 35/17.5mm magnetic film and as 16mm film-scanner, colour or b/w with COMOPT, COMMAG and SEPMAG facilities.

The new V2/OMA3 is the most rapid and most careful film machine for 16mm scanning and projection. With a light intensity of 160 Lux on a 2-meters-wide screen and a steady picture up to a speed of 300 f.p.s. this projector fulfills the demand of a modern dubbing theatre. Audio specs, such as wow and flutter and signal-to-noise ratio, meet the standards for SEPMAG equipment, so that the V2 also can be used as a magnetic film recorder/reproducer. The fact that power electronics, as well as the electronically temperature controlled Xenon lamp house, are completely enclosed in the 19" rack which is on casters underlines the versatility and mobility of the equipment.

The Timecode-Interlock as a first module out of the new Electronic Programmer System EPS 8000 interlocks any number of SONDOR dubbers to the SMPTE Time and Control code recorded on a cuetrack of a VTR or VCR. Speed range of the electronics goes from 1/4 normal running speed up to 50 x. Offsets of up to 24 hours are accepted and interlocking of magnetic films with a timecode recorded on the newly standardised cuetrack are possible as well as interlocking without timecode on the sprocketed tape, in which case the films have to be set on start mark.

On all SONDOR dubbers, new amplifiers have been introduced allowing noise-free "all-situation-inserts". Also Replay-off-recordhead (the so-called "selsync"-operation) is by now a standard feature on all SONDOR dubbers.

SAMUELSON'S SCAF LADDER A HANDY PRODUCTION TOOL

The SCAF LADDER is a 7 meter/23-foot-high free-standing triangular ladder, which breaks down into a small package, which fits into an estate car, which will pass through an ordinary door, which (because of its modular

design) can be erected by two men in a few minutes without nut and bolts or special tools. The assembled SCAF LADDER has a broad metal base for stability and wheels that allow for easy movement, but can be locked down.

The SCAF LADDER can be used for all maintenance purposes in factories, churches, warehouses and schools; for getting to difficult-to-reach places on building sites and warehouses; as an observation platform on racecourses and battlefields; as a lighting gantry in sports grounds and film studios and for getting to all sorts of places and situations at less cost than a scaffold tower. It could have countless applications on a motion picture or television location.

The SCAF LADDER is a solution finding more and more problems to solve.

Details from: SAMUELSON LIGHTING LTD., Dudden Hill Lane, LONDON NW10 2DS, ENGLAND. Telephone: 452-5477.



NEW VERSION OF OSCAR-WINNING STEADICAM AVAILABLE

Cinema Products Corporation announces the availability of a new version of the Oscar-winning STEADICAM film/video camera stabilizing system—STEADICAM (Universal Model II).

While the basic design of the system has not undergone any revision, several modifications have been incorporated into STEADICAM (Universal Model II) for greater maneuverability and safety in operation.

The new *breakaway-style* camera operator's vest features an emergency release cord located on the vest's right shoulder, which allows the operator to divest himself of the entire STEADICAM system in less than two (2) seconds in any emergency situation which may *Continued on Page 948*

“We’ve sold \$250,000 worth of Tiffen filters, a record that speaks for itself.”

Grant Loucks, President,
Alan Gordon Enterprises

“Probably the most severe test one can put a photographic filter through is to introduce it into the optical path between camera taking lens and optical collimator, then comparing the resolution of that lens with and without the filter.

“Here at AGE Motion Picture Rental Department, we put Tiffen Filters to this test on a regular basis, as a means of assuring consistent quality.

“Tiffen Filters meet our highest standards. They are reliable and remarkably well constructed, with no short-comings in color stability or quality control.

“Using Tiffen Filters on rental lenses is also a matter of sound business judgement. It is not unusual to have a twenty dollar Tiffen Filter save a four-thousand dollar lens, by protecting it from flying debris, sand or dust.

“We also *sell* filters from the largest inventory on the West Coast. In the past several years, Alan Gordon Enterprises Inc., has sold a quarter million dollars worth of

Tiffen Filters, a record that speaks for itself.”



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“Dios mio, que he hecho?”

Hans Burman/Director of Photography

“Saint Chem-Tone did a miracle.”

Orlando Jimenez-Leal/Director

“When I was called to direct *Everyday, One Day*, starring Julio Iglesias, my first thought was, this film will have to look beautiful.

“Being a Director of Photography myself, my long experience with your lab and the Chem-Tone process made me confident that I would get the results I wanted.

“But my Director of Photography, who came from Madrid, did not share my confidence. Therefore, I had to push him to push the film—to mix all kinds of color temperatures, to shoot with very low, low light levels and, sometimes, no levels at all. He went along very reluctantly.

“The night we saw the first dailies, he was on the edge of his seat (and so was I ... maybe I had pushed him too far ...).

“As the dailies appeared, my D.P. was impressed—he couldn’t believe his eyes. Amazed and happy, he turned to me and said, ‘Dios mio, que he hecho?’ (‘My God, what have I done?’).

“Nonchalantly, I replied, ‘Thank Chem-Tone.’

“Trying to imitate my English, he said, ‘San Chem-Tone?’ (‘Saint Chem-Tone?’).

“Suddenly, he realized what he had said. ‘That’s right,’ I said, ‘Saint Chem-Tone did a miracle.’ We all laughed.

“The Spanish people, as you probably know, are very religious; so, now, my cameraman is very devoted to a new ‘saint.’

“Thanks ... you did a beautiful job!”



Solo **tvc** has Chem-Tone

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THE NEW SAMCINE A.C. LIGHTING POWER DISTRIBUTION SYSTEM

Film 79

Since the introduction of HMI lamps, which are three or four times more efficient than regular Tungsten bulbs, the use of mains voltage AC electricity to power on-location lighting equipment has been more prevalent.

In Britain the mains voltage is 240V AC (220V elsewhere in Europe), making the distribution of AC power quite a different ball game from that of 110V DC.

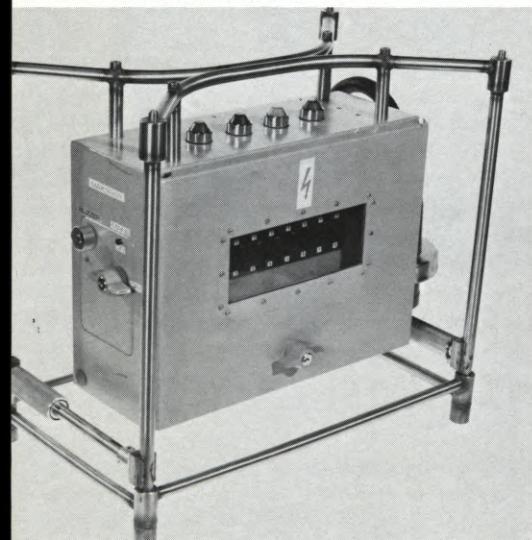
A code of practice has recently been drafted by the British Standards Institute which will require that all 240V AC equipment be protected by earth (ground) leakage devices.

Earth leakage devices are automatic cut-outs or breakers which switch off the power if there is the slightest leakage to earth anywhere in the system and are used extensively for general industrial purposes not connected with film and television work.

The problem with their use in film and television is that they may easily switch out all the lights during a long take or a live television broadcast if someone with a particularly damp sneeze sneezes up-wind of a 2K.

Faced with this requirement, Samuelson's Lighting Division, Samuelson Lighting Ltd., have designed the Samcine AC Lighting Distribution System to fulfill the requirement and still maintain a constant power supply that is necessary for film and television work.

The Samcine distribution system monitors incoming mains with a sensing coil and will detect any ground leakage in excess of 30 milliamps.



An important new ground leakage device, that meets the recently formulated stringent safety requirements for HMI Lighting, while ensuring that the lights won't go out right in the middle of a take

The Samcine distribution system monitors incoming mains with a sensing coil and will detect any leakage to earth (ground) in excess of 30 milliamps from equipment connected to the unit. The leakage is signalled audibly and visually, enabling the operator to trace the origin of the leakage and clear it.

The eight-way distribution unit uses three 32-amp and five 16-amp 220/240V two-pole and earth, BS4343/CEE17 splashproof, industrial panel-mounted sockets. Each socket is fitted with a neon indicator and protected by a mechanical circuit breaker of compatible rating and an isolating neutral link. The circuit breakers are non-thermal and the isolating neutral links can be finger-tip operated.

Access to the circuit breakers and the neutral links is by a waterproof lockable cover with an unbreakable viewing window. The cover is hinged at the top and has an interior inspection lamp which lights automatically when the door is opened.

A double-pole isolator switch, a neon indicator, is controlled from one side of the unit. The switch is lockable in the off position and the same key locks the access cover.

Mains supply to the unit is by a three-core TRS connected 125-amp plug which is clipped to the unit when not in use.

Under the carrying handle on top of the unit are four waterproof pattern coloured signal lamps which indicate the state of the system. The red light indicates that the unit is "live", the green that polarity is correct and that the unit is connected to earth (ground). When an earth leak (ground fault) in excess of 30 milliamps is detected the blue lamp flashes and will continue to do so until the earth is cleared. A push-button changeover switch with a protective shroud, situated on the inside of the unit next to the isolator switch, is used to select a buzzer to operate in conjunction with the flashing blue lamp when an earth leakage is detected.

When recording sound the buzzer may be switched off and the amber on the top of the unit glows to indicate "buzzer off". The buzzer switch is colour coded: black—on, amber—off, so that selection is possible before connecting the unit to the mains.

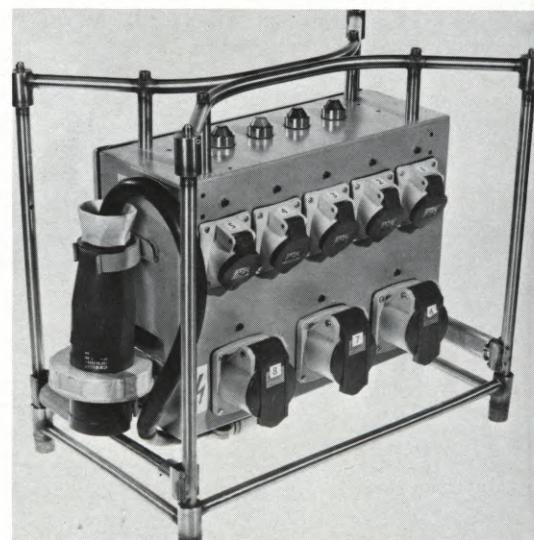
A button to test the detection circuit is mounted internally, and the unit is so designed that each time it is switched on the blue lamp and the buzzer will operate for approximately 10 milliseconds. In the event of a relay failure the detection circuit will "fail safe" to the earth (ground fault) detected mode.

The unit is manufactured from sheet steel to withstand impact, and conforms to waterproofing specifications. It is fitted with guard rails which, in addition to protecting the switches and sockets from damage, are designed to allow one unit to be stacked on another and are available in telescopic form, so that the legs may be extended to increase the height of the unit when working in particularly wet situations.

In practice the unit is switched to give an audible warning during the entire time that lamps are being rigged. With this system, as each cable run or lamp is made live, any power leakage to earth (ground) will automatically be signalled. By switching out each line in turn the fault may easily be traced and rectified.

Only when all is working satisfactorily, and during an actual sound take, should the gaffer, or the electrician responsible, switch over to a visual-only earth leakage (ground fault) warning, switching back to the audible warning system as soon as the take is completed. ■

The eight-way distribution unit uses three 32-amp and five 16-amp 220/240V two-pole and earth, BS4343/CEE17 splashproof panel-mounted sockets.





THE RIGHT PRICE

"We didn't have a fortune to spend on processors," states Stan Nalski of Film Craft Laboratory, Detroit, MI, "but our volume necessitated good equipment."

The processor that Film Craft finally selected was an Allen. Allen . . . quality equipment at the right price. Features like the dependable ATA film transport system is one example of built-in value. Solution and energy conservation systems are another, as are digital speed and temperature readouts. Automatic load accumulators, 316 SS and titanium throughout, and removable racks are other advantages. All help to keep cleanup and maintenance to a minimum. But our reputation for giving good value is only part of what Allen has to offer, we are known for great service and technical support, too. For details, send for literature or talk with an Allen Rep.



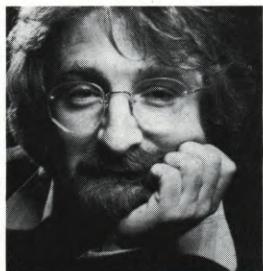
The Allen Products Company

Box 417, 180 Wampus Lane, Milford, CT 06460 Tel: 203 874 2563 Telex: 964368
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"I want to stay ahead of my competition. That's why I bought computer animation equipment that doesn't have any."

George McGinnis, Image Factory Inc.



The Cinetron 1100 can do more for you than any other

The Cinetron 1100

computer animation equipment made by anyone. Anywhere.

It lets you create stacks, strobes, tubing, slit-scans, even isometrics. And it does it all fast and easy.

It has an electronic motor with up to 14 speeds plus rewind and anti-strobe adjustments. It even has automatic moves. You simply show it where to start and stop.

The Cinetron 1100 gives you inverse sine, logarithmic, level and exponential speed tapers. This exponential taper lets you match the speeds of different zooms, on or off center, automatically and gives you the most life-like acceleration and deceleration of anything on film.

The Cinetron 1100 also gives you smoother fades and dissolves than you've ever gotten before.

Two of the three peg tracks will hook up on command. So you don't need long backgrounds or planning to the point of hook up. The 1100 will sense the hook up point you indicate and reset the track, making the proper background overlap automatically.

The 1100's list of capabilities just goes on and on. It even under-

stands English. No computer programming is necessary. It saves you time and you can meet schedules you never could before. You'll also be able to devote more time to creativity than you could in the past.

The Cinetron 1100 is an assistant that never makes a mistake. It'll do exactly what you tell it to and never misunderstand you.

Why do you get so much more from the Cinetron 1100 than from other computer animation equipment? Because besides designing and manufacturing computer animation equipment, Cinetron uses our equipment the same ways you do. We do animation. From cell animation and graphics to titles and mattes. And we deal with the same problems you do. So when you call Cinetron with a question, chances are, you'll speak with someone who can answer it.

There's another advantage to our using the equipment we make. It gives us the chance to work the bugs out. We test every capability of our equipment for up to two years before we even make it available to anyone else. So you get gear you can count on. And if something should go wrong, you can count on us to make it right.

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If you need any computer animation equipment, regardless of how sophisticated, call (404) 448-9463 and we'll talk. We'd suggest you check us out against our competition first, but when you find out what they offer, you'd learn we don't have any.



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THE STEREO BLACK SCREEN

Film 79

By PAUL McGURK

The STEREO BLACK SCREEN is the result of 10 years' research and development by one very exceptional man—Sasuke Takahashi of Yao City, Osaka, Japan. He was convinced that the advances made in screen technology over the last fifty years in no way could be compared with those made in the other fields of image reproduction. The latest methods of recording information on film or video had far outstripped the capability of any material to faithfully reproduce that information to the human eye.

The result of his belief and endeavour was the STEREO BLACK SCREEN, now patented throughout the world.

It has been said that the definition of genius is the infinite capacity for taking pains. I believe that, when I visited Mr. Takahashi recently in Japan, I met a man with that capacity. I was determined that his invention should be seen and appraised by professionals and that the marketing of the product would begin at the most critical end of the viewing spectrum.

In the past few months I have had the opportunity of demonstrating this material under many testing conditions and have been able to compile a list of uses for which I believe it has no equal. Dubbing theatres, print viewing, conference presentation, exhibition display, mobile film presentation units, rushes, projected television systems, education and training, preview theatres—are a few.

Each day we learn of new applications. I have been permitted to say that the new Kodak Museum opening at Harrow in the near future will use one of these screens in its visitor-operated audio-visual display—testimony indeed!

This remarkable screen material is quite unlike that of any other type of projection screen.

Conventional screens all produce some degree of light scattering at their reflecting surface. This is due to the irregular nature of the reflecting medium when compared with the wavelength of light. The resultant diffuse nature of the reflected light reduces the image quality and, in particular, reduces the contrast range because of the flare effects caused by the scattering of incident light.

The image contrast available from normal screen materials is also determined by the level of ambient light. This ambient light reflected from the screen

limits the value of "black".

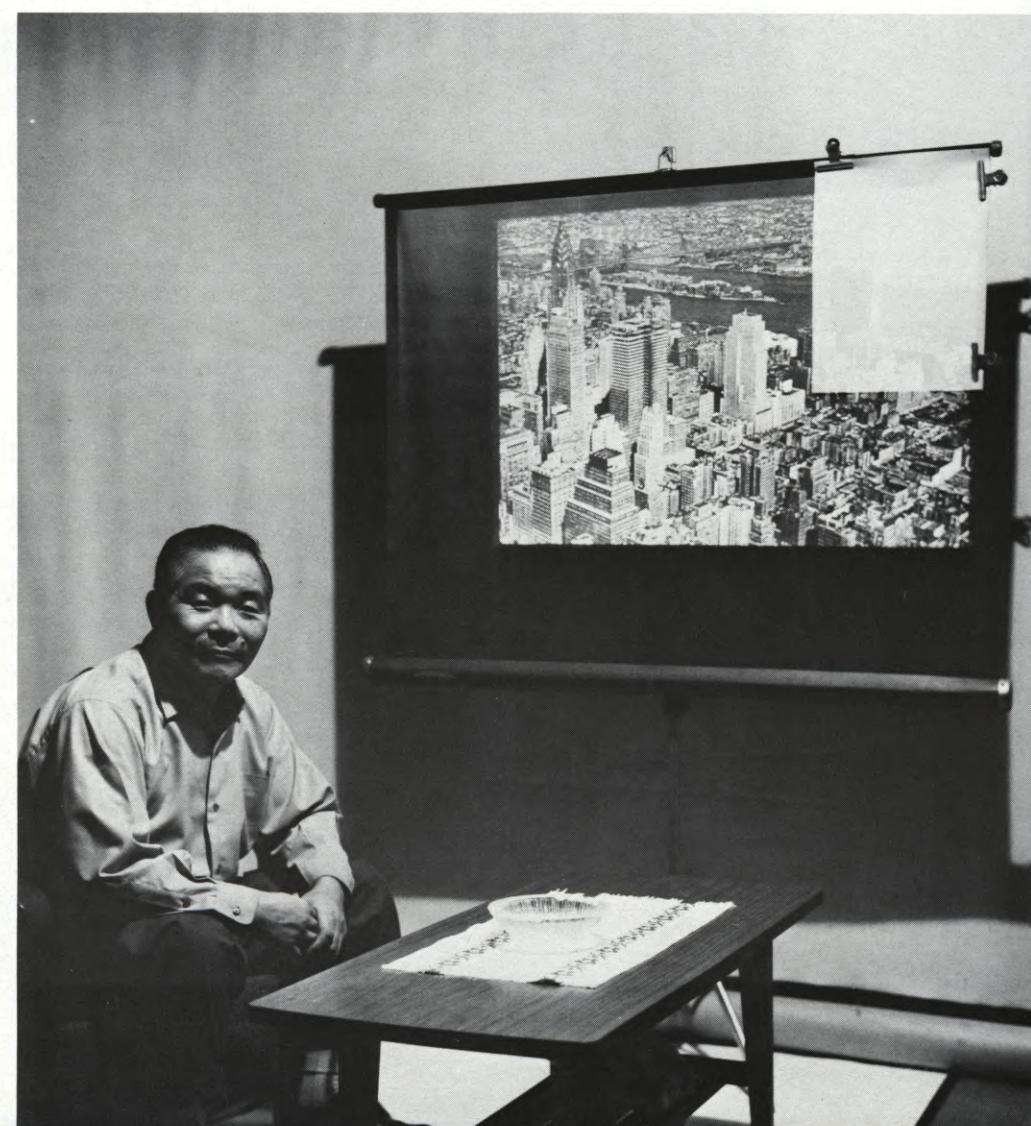
The STEREO BLACK SCREEN overcomes both of these problems by employing the principle of multiple reflection. Its surface comprises 12 parallel layers each less than 1/5000mm thick. These layers, which are made from the scales of the Scabbard fish, are colourless and transmit most of the light incident upon them. However, the surface of each layer reflects about 10% of the light falling upon it in a manner which satisfied the elementary laws of reflection at a plane surface. The 90% which is passed through to the next layer also has 10% reflected at its surface; and so on for the 12 layers. Thus, the reflected image is made up of 12 successive reflections which all emerge along the same axis. Any remaining incident light which is not

reflected is absorbed by the special backing material which acts similarly to the antihalation backing layer of film.

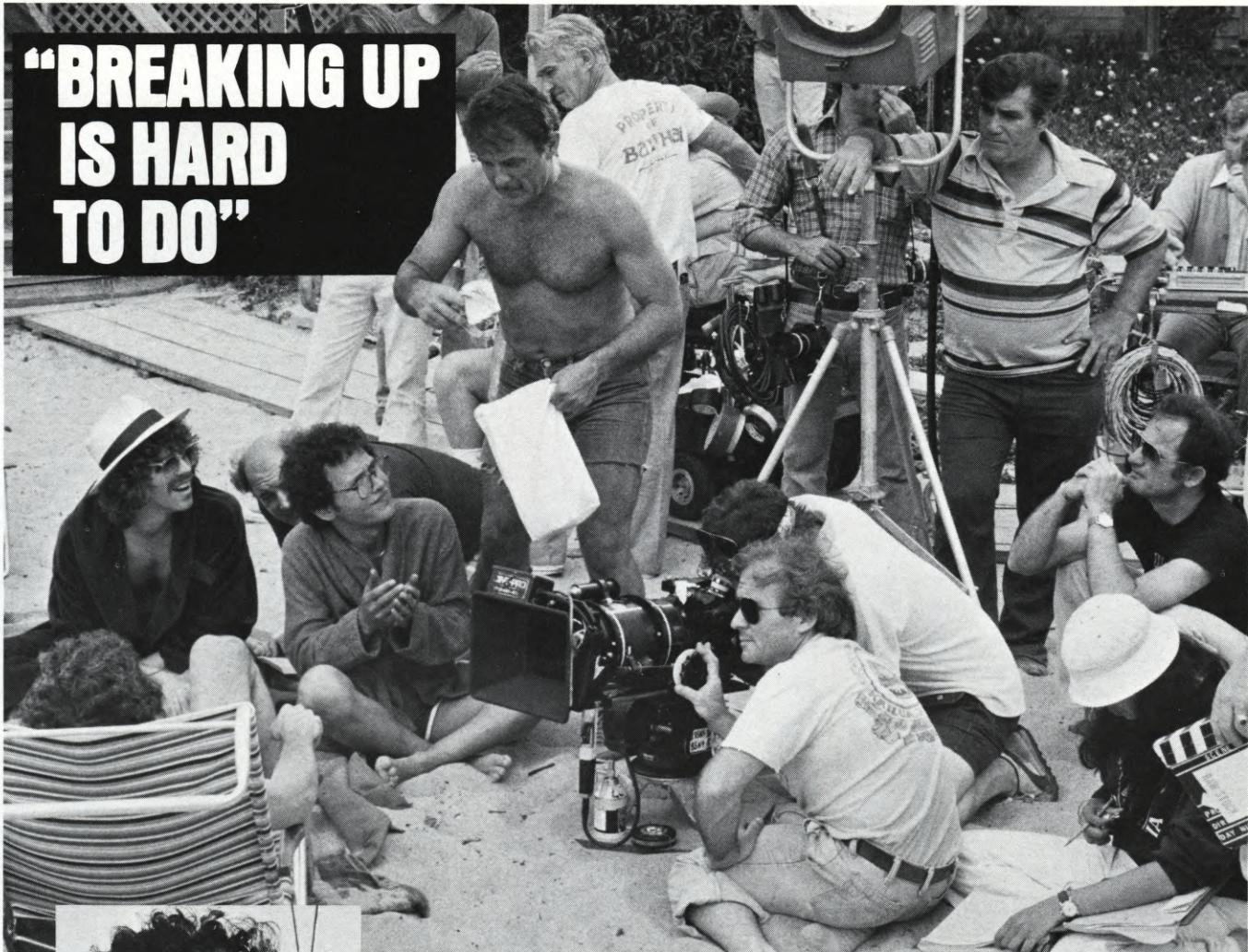
The image quality is exceptionally high because there is negligible flare. The absence of flare results in a very high screen contrast wherein black is black. The effects of ambient light are relatively unimportant because the incident angle of such light normally exceeds the critical angle of the screen and cannot, therefore, enter the multiple reflecting layer stack. ■

(*Direct further enquiries to Paul McGurk, Marketing Manager, Herbert Beven & Company Ltd., Boxford Court, Boxford, Colchester Essex, England; Telephone: 0787 210021 (office), telephone: 01-352 2667 (home); Telex: 987248.*)

Seventy-five years old, and after more than a decade of intensive research and development, Sasuke Takahashi is proud of his Stereo Black screen, which reflects an amazing amount of the light directed toward it in projection, while absorbing ambient light by means of its black "anti-halation" backing material. Twelve layers of Scabbard fish scales coat the surface.



**"BREAKING UP
IS HARD
TO DO"**



**CINEMATOGRAPHY
BY
GAYNE RESCHER
with
equipment
by**

A GREEN-EPSTEIN PRODUCTION in association with Columbia Pictures Television

Producers	Jim Green and Allen Epstein
Associate Producer	Audrey Blasdel-Goddard
Director	Lou Antonio
Unit Production Manager	Harry Hogan III
Director of Photography	Gayne Rescher, A.S.C.
1st Asst. Cameraman	Leo Napolitano
Camera Operator	Paul Polard
Gaffer	Roe Acquistapace
Key Grip	Jay Johnson

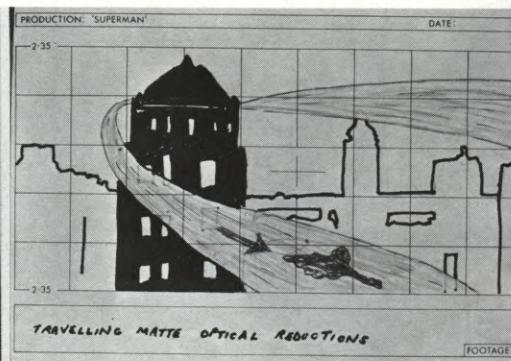
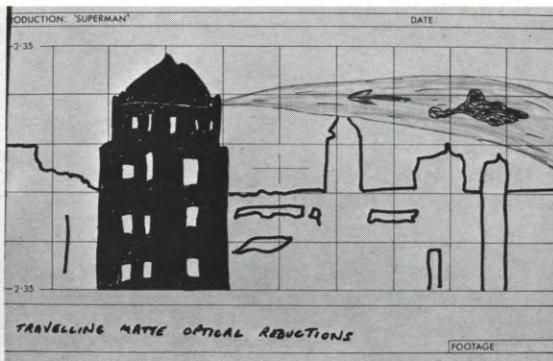
Around the world twice, filming *Seven Wonders of the World* . . . around again to shoot *Windjammer* . . . honored for his outstanding work on films such as *Rachel, Rachel*; *John and Mary*; *A New Leaf*, and many more . . . Gayne Rescher has won recognition in film circles everywhere as one of Hollywood's top pros. His special touch is evident in *Breaking Up is Hard to Do*, making it clear why actors and directors rest easy with Rescher behind the camera.

Gayne has relied on Cine-Pro equipment in many film productions. "When you get equipment from Cine-Pro," says Gayne, "you can depend on Carl Porcello to see that you get exactly what you want, where and when you want it, day or night."

CINE-PRO

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(LEFT) To shoot a scene of Superman zipping behind buildings, a background "plate" of New York with the tower block in the mid-distance was shot. (CENTER) Superman was reduced in size by a combination of zoom lens and optical printer, and he had to be panned in the optical printer to create the illusion of his sideways flight. (LEFT) The third stage was his flight back to the camera, after having disappeared behind the tower, reappearing in front of it.

TRICK CINEMATOGRAPHY

Continued from Page 892

difficult or inconvenient to arrange as a real situation: as, for instance Superman flying over New York. Here we would take a picture of the background scene, and a picture of Superman, flying against a special blue background. From this, we would expose to make an opaque mask, or matte, of the figure, against a clear background. This would be bi-packed in contact with the scene of New York and printed onto a piece of internegative film.

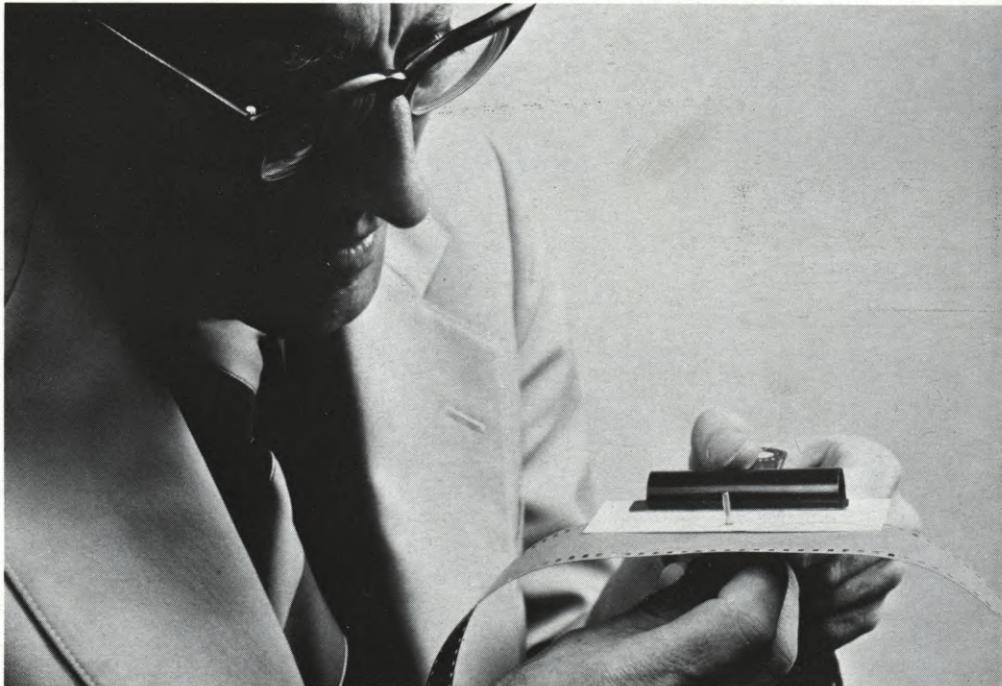
If a print were made from it at this stage, it would show a replica of the scene, but with exposure held back in the shape of Superman. In fact, the picture of Superman is printed into this unexposed area, the blue background being held back by bi-packing it with a reverse mask—known as the counter-matte. The final result is the required composite picture.

In practice travelling mattes are often much more complex than the simple case illustrated, with ten or more separate elements combined onto different areas of the field of view within a sequence.

The background colour is chosen as one that is unlikely to occur—or can be avoided—in the foreground subjects, so that the background can be eliminated when the matte is made. Of the colours that can be used, red, green or blue, the blue is the most suitable in relation to the film emulsion characteristics. This led to some delicate work in choosing the exact shade of material for Superman's costume, that could be separated from the background.

Picture negative steadiness has its part to play in obtaining a high-resolution result. If exact registration does not occur the result will be unsatisfactory and the effect spoiled.

Let us consider a famous sequence in the film SUPERMAN, where Superman is flying across New York looking for



To select perfectly perforated holes for special effects work, four consecutive pairs of punched holes are gauged, using a standard Mitchell pin. The film is held horizontally in a special clamp. Then the pin is carefully inserted from below. Holes are sought that will grip the pin snugly and prevent it from slipping under gravity. (BELOW) If one such pair are found, they are marked and the camera assistant will thread the camera so that the register pin enters the marked hole.



Luthor, who is hiding in his lair. He enters frame top camera right passing the camera very closely and then flies away to become a very small figure in the distance. Then he disappears behind a large tower block, reappears on the other side coming toward us and flies right into camera and dives at the last moment out of frame, camera right. This complex optical was a combination of travelling mattes of Superman, and optical moves.

The shot was broken down into sections. First of all, the plate of New York with the tower block in the mid distance. Secondly, Superman flying away from camera against a blue backing, basic flying moves here being obtained by using a zoom lens. A Panavision 50-500 anamorphic was used which gave a 10-to-1 reduction. Then on an optical printer we started reducing on a colour reversal internegative (CRI) from the first frame that Christopher Reeve was completely in frame and carried on the reduction on the optical printer getting a further 7-to-1 reduction until the point where he disappeared behind the tower block. Also during this optical move, we had to pan the optical printer to make his sideways flight. The third stage was his flight from the tower back to camera which was achieved by using the same process in reverse. After that, a matte was made of the tower, by delineation, so that Superman disappeared behind the tower which was on the background. When all these sections had been completed, the normal travelling matte process was carried out to superimpose Superman onto this background.

On SUPERMAN, many different systems of special effects were employed: front projection, back projection, high-speed photography, micro-photography, double-exposure techniques, and so on. Travelling matte was just one of the composite cinematography systems used.

It is obvious when considering the number of moves both in the original photography and on the optical printer, that complete control must be enforced at all times. A closed-circuit video system for overlaying Superman against the plate at the time of shooting the travelling matte photography was found to be a tremendous help, particularly for judging the angle of incline of Superman during his flight. These inclines, attitudes and banking movements cannot be changed later. On many occasions, to get Superman small enough, it was necessary to make a double CRI on the optical printer.

During the making of SUPERMAN, a scene was shot involving Christopher Reeve as Superman, lying in the railway track bridging a gap in the line so that the wheels of the train passed safely over his body. The lower sections of the scene

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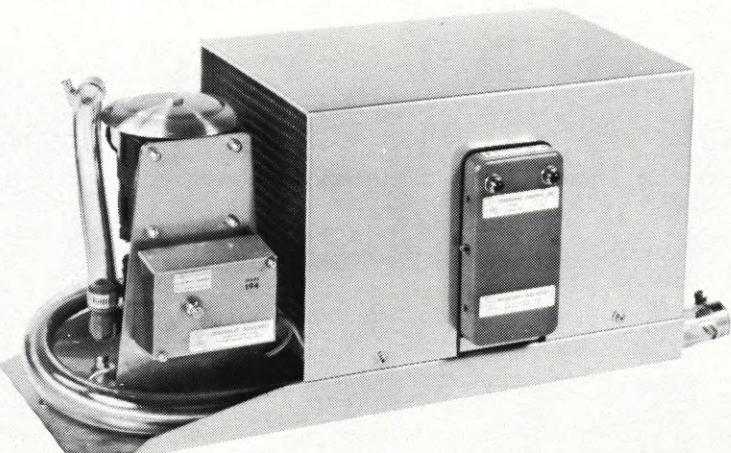
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were shot on the stage at Pinewood. The top half was shot by an entirely different crew in America many months later. Now, it was essential that, not only should both halves be rock steady but also both components should match in perspective, lighting, contrast and detail. To achieve this, measurements were recorded during the first shooting, of lens

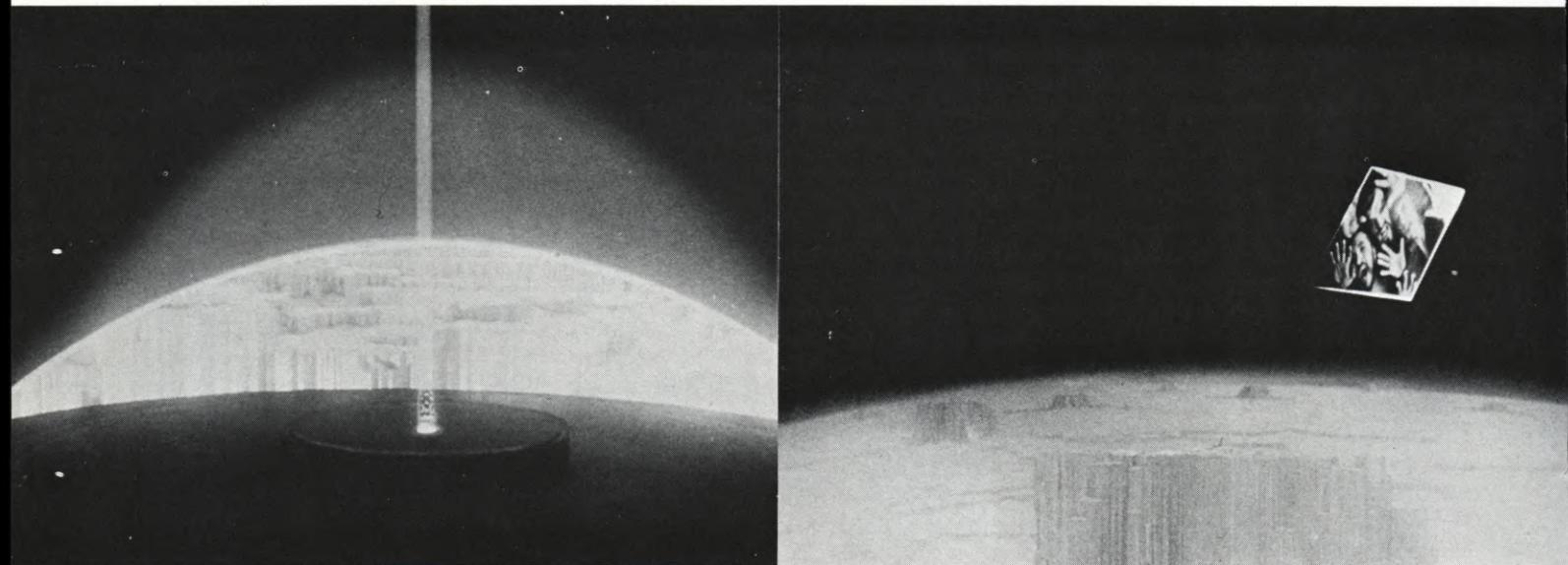
heights, distance from camera to railway, elevation and tilt of camera, lens angles, key light direction and any other relevant information. All these facts were then used in America to line up and shoot the real train speeding along the railway-line and the job in the optical printer was then comparatively easy.

It is obvious that strict control must be

maintained over all components of an optical shot. It must also be noted that if there is any picture negative unsteadiness on either component, the final composite will not be satisfactory and the whole illusion ruined. It can be seen from this that steadiness in the original photography is of the utmost importance.

Continued on Page 937

(LEFT) A complex early sequence in **SUPERMAN** showed three villains being held captive by the council of elders of Krypton in a beam of light with revolving rings. (RIGHT) When they were sentenced to eternal imprisonment, a strange diamond-shaped object had to descend from space, collect them and take them into orbit around Krypton. This involved optically printing together five separate scenes, with their respective mattes.



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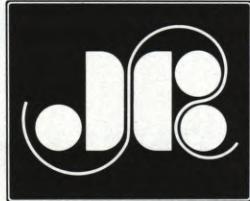
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The frame, filter-holders and adapter ring are aluminum, milled for perfect flatness and finished in black. The sunshade is aluminum and black rubber.

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ULTRACAM-35 CAMERA Continued from Page 901

zoom is incorporated to give up to 9x magnification for critical focusing. Image always stays in focus and it can be viewed at any intermediate magnification. A 2-1 cylindrical lens assembly can be positioned in the optical path for correct viewing of anamorphic images. The ground glass is of a T configuration and can be easily interchanged. Diopter setting for individual eye accommodation is internal and calibrated for reference. Clearance between side of camera when using short or long eyepiece is sufficient for left or right eye operation.

VIDEO:

A C.C.D. camera is incorporated in viewfinder to monitor ground glass image. No external additions are required to ULTRACAM camera.

MOTOR:

Camera drive motor is integral with movement—not a separate component. Operation is on 24V DC and motor is optically encoded, obviating the need for brushes and their inherent noise. Rotor uses samarium cobalt magnets for maximum performance to weight ratio.

SPEEDS:

Running speeds are 8, 12, 16, 18, 20, 24, 25, 28 and 32 FPS and by a 10V P-P external pulse of 60x frame rate. Two output pulses are available: 60x frame rate and 1x frame rate. All speeds are crystal controlled to $\pm 15\text{ppm}$ over a 0° – 130° F range.

MAGAZINE:

At the present time, 500' and 1000' magazines are available, both of displacement type. All magazines have built in torque motor for film take-up. Motors are of identical construction to camera drive motor already described. Torque of magazine take-up is controlled by spring-loaded arm in camera body: this feature ensures correct take-up tension with empty core or 1000' load in magazine and everything in between. Each magazine also has an electric brake which is released when camera is switched to run, and instantly re-engaged when camera is stopped. Either magazine can be mounted on top or rear of camera. Magazines are held by a quick-action eccentric clamp.

FOLLOW FOCUS:

Follow-focus is built into camera body, and various types of controls can be attached to either side of camera.

FOOTAGE COUNTER:

Digital LED counter with readouts on both sides of camera. Visible in bright sunlight. Camera has internal switch for changing readout to feet or metres. A preset feature is incorporated for setting

footage counter to any desired number. Internal 9V transistor battery holds memory on counter indefinitely. Counter can be activated and checked on this internal battery without camera being connected to main power supply.

LENS MOUNT:

The camera has a standard BNCR lens mount for convenience of use. Lenses are solidly mounted camera body and film transport assembly. No additional supports are required for zoom lenses.

HANDLES:

A carrying handle can be fitted to top or back of camera, depending on where magazine is being used. A pistol-grip handle can be fitted in a high or low dovetail slot in camera body. This pistol-grip incorporates a run switch which can also be used as a remote control, using cable provided.

MATTE BOX:

The matte box assembly is of light weight tubular steel construction. It slides in a quick release dovetail slot and swings open at camera body. Accepts three 5" x 6" filters.

SOUND LEVEL:

Sound level is 20 ± 1 DBA at 3 ft. from film plane with film and 50mm lens on camera.

WEIGHT:

31 lbs. with 50mm lens and 400' of film in 500' magazines.

CONSTRUCTION:

All camera body structural parts and magazines are of magnesium alloy.

POWER SUPPLY:

20-30V DC. Normal running current is 2½ amps.

HEATER:

A 50W heater is located on the movement, motor, shutter, sub-assembly for cold weather use.

SIZE:

12" long x 8" high x 10" wide.

LENSES:

Lenses available under ULTRANON trademark. 18mm T-1.9, 24mm T-1.4, 28mm T-1.8, 35mm T-1.4, 85mm T-1.4, 135mm T-2, in design 16mm T-1.4, 20mm T-1.4.

For further information regarding the ULTRACAM-35 equipment, please contact LEONETTI CINE RENTALS, 5609 Sunset Boulevard, Hollywood, Calif. 90028. ■

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Marvin L. Gunter has been in the forefront of TV and Motion Picture lighting and cinematography for more than twenty-five years and has such credits as "The Boston Strangler," "Gaily, Gaily," and "The Dr. Kildare Show" to name a few. We thank Mr. Gunter for his kind words.

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CINEMA WORKSHOP

Continued from Page 856

red and blue tubes so as to perfectly match the output level of the green tube. *Voila!* The outputs of all three tubes are identical, so the white card will reproduce white. Thus any anomalies in the light source are automatically compensated. The process takes as little as 1/2-second and an indicator light in the viewfinder usually tells you that the process is completed. Once the button is released, the gains of the three tubes are locked and the "color temperature rating" of the camera will remain unchanged until another lighting situation is encountered and the button is once again pressed.

Even if the source is a mixture of daylight, fluorescent and tungsten, merely place the white card in the position of the subject, zoom in on it, adjust the iris and press the white balance button. That's it. Flesh tones, as well as other colors, will be perfect.

In addition, most video cameras employ built-in color filters for gross adjustments of color temperature. There is usually a 3200°K and 5600°K position and, in some cases, an intermediate position of 4500°K. The cameraman should first approximate the color condition with one of these three filters and then auto white balance. The results are amazingly accurate and even the most bizarre lighting mixtures can yield perfectly balanced images. What will they think of next? ■

FILM IS GOOD FOR TV

Continued from Page 880

demanding to be told in a certain way for the reasons I have touched on. But, if a play is set in a TV studio and the script calls for inserts from outside locations—then, if a director chooses not to mix his textures, he should be applauded for recording these inserts with video camera. He is just as likely to make his next play all on film. The textural difference, the subtlety of film, the intimacy of the creative atmosphere all come into play in this decision-making process.

For those whose livelihood and fulfillment depend on the use of film and who may feel threatened by video, there are two comforting facts to take into consideration.

The first is a plain statistic. The television industry in Britain consumes almost twice as much film as the British film industry. The second is not a statistic, but the dawn of a new era, in the form of non-broadcast distribution of films and television programmes. First the video cassette recorder and now the video disc. They are no longer the wild dreams of engineers, they are a reality, they work,

they are here and they are without doubt technological marvels of great importance to us all. A whole new world of film and programme-making is opening up with equal opportunities for both film and video.

I hope by now that everyone knows what a Videogram is. Last year there was still great confusion over this word. It is not a flat round thing with a hole in the middle, although it can easily end up looking like that. It is a film or programme destined for non-broadcast distribution—cable, cassette and, of course, the video-disc.

I was lucky enough to be asked by EMI to direct their first Videogram, CHRISTMAS CAROLS FROM KING'S COLLEGE CAMBRIDGE, with the sound in stereo. I could have made it on film—but chose video—followed by the carol THE ANGEL GABRIEL.

Now why did I choose video? Christmas Carols from King's College Cambridge is an English ritual. We know it because of the BBC's Outside Broadcast coverage over the years. I tried to transform this annual live event into an "evergreen" lasting programme. Hence the different treatment. The evergreen voice of Sir John Gielgud reading the lessons; if you like, investing the live event with timelessness, and yet preserving the immediacy of the musical performance. I felt that the texture of the electronic image is better suited to achieve this.

However, there was another texture which intrigued me—that of the Chapel itself. The fan vaulting; the stone carving of the Tudor heraldry; the wood carving of the Fellow's Stalls and the organ screen; the stained-glass windows, tapestries, and so on.

Of course all this can be carefully lit and photographed on film and made to look glorious. For me that cruel crispness I mentioned earlier of the video image captures and transmits the Chapel's textures marvellously well. And I made my choice accordingly.

There were also logistical reasons. Although I had the Chapel for one week I only had the choir for two days. Fifteen carols in two days in nine different locations in the Chapel. Young choristers with many other commitments—such as school and normal choir practices—producing a fatigue element which had to be taken into account. It would have been impossible to use film under these restricting circumstances.

Now, I could easily have used film for the stained-glass windows. They were too high-up in the Chapel for my cameras to reach when I had all my ironmongery there, so they had to be reproduced from colour transparencies. In other words, a

Continued on Page 945

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Continued on Page 945

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THE NEW AÄTON 8-35 35mm CAMERA

Film 79

A stunning surprise at FILM '79 was the introduction of a brand new compact, lightweight, hand-held 35mm camera known as the Aäton 8-35. One got the impression that even the Aäton people were surprised by the tremendous positive response accorded the camera, apparently not fully realizing what they had there.

As the story goes, two years ago the well-known French director, Jean-Luc Godard, commissioned Aäton to make a very special kind of 35mm camera. He wanted to combine the advantages of the quantity of information contained in a 35mm film image with the ease of handling and unobtrusiveness of a Super-8 camera—quite an order, when one considers the ramifications of such a combination. As it turns out, the first prototype has been in use since April, 1979, with results that are more than encouraging. Now, it would seem, the Aäton people are set to go full steam ahead into production of the Aäton 8-35 camera, promising availability (whatever that really means) by Photokina '80.

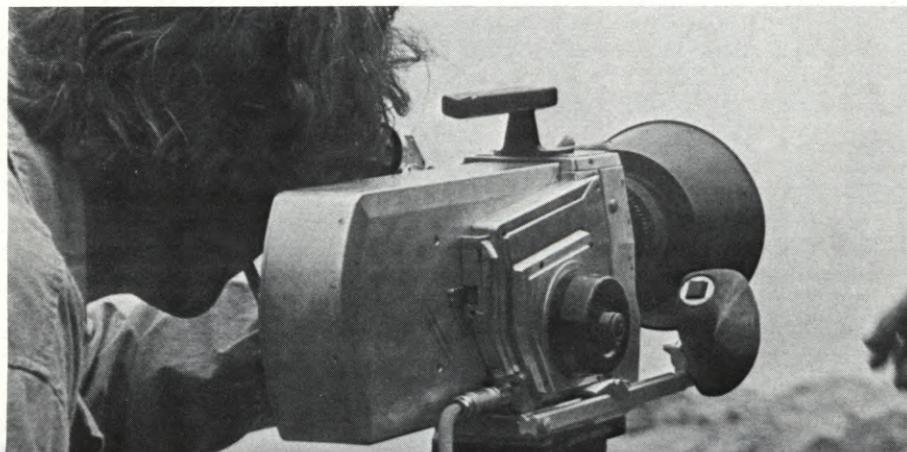
What immediately follows is descriptive material provided by the manufacturer:

The Aäton 8-35 is handheld, and has instant coaxial magazines; until now, the only 35mm camera with instant mags has been the Cameflex (1946), which is extremely noisy.

The noise level of the 8-35 is 33 dB. Without any sound absorbing material, the prototype runs at 35 dB; two decibels less is realistic with damping. 33 dB appears quite acceptable in light of the fact that a non-optimum self-blipped 16mm camera can run in that area.

The steadiness is excellent; it is ensured by the same claw movement sys-

The Aäton 8-35 camera was commissioned two years ago by French director Jean-Luc Godard, who wanted to combine the quality of the 35mm image with the ease of handling and unobtrusiveness of a Super-8 camera. The 8-35 is more the size of the Eclair ACL or Arriflex 16SR 16mm cameras, but is very lightweight and low-profile with 200-foot magazine mounted.



Shown publicly for the first time at FILM 79, this extremely low-profile and lightweight 35mm camera, with 200-foot magazine, sparked attention and became the "conversation piece" of the show

tem (U.S. patent 3806016) that has made a name for the Aäton 16mm LTR. The pulldown of the stroke is absolutely linear, with the dead point in the film plane. Willy Lubtschansky, J.-L. Godard's cameraman, contends that the 8-35's steadiness is comparable to that of a Mitchell. On double exposure tests, no visible sign of any movement whatsoever can be observed.

An original feature: a second electric motor in the camera body drives the 60m and 120m magazines through an independent drive clutch.

The 8-35 is small, and light; it weighs in at around 5 kg, with 60m mag—slightly less than the Aäton LTR 16mm camera.

This camera is meant to be a companion to the Panaflex or Arri 35 BL: it is easy to handle, unobtrusive, mobile. For certain films, it may even be the only camera; with a soft blimp, the sound level could be made acceptable for indoor work.

Jean-Pierre Beauviala, inventor and designer of the ultra-sophisticated Aäton 7 LTR 16mm camera, had been scheduled on the FILM '79 papers program to speak on the subject of "A New Single-System Camera", which is actually the new Aäton 7 Basic 16mm camera, designed to meet the need for a very robust, inexpensive single-system camera, "for applications when ultra-quiet running is not necessary, and high-speed film transport is required."

At almost the very last moment, it was announced that Mr. Beauviala would speak instead about the new Aäton 8-35 camera. What follows has been excerpted from his remarks on that equipment:

When Mr. Godard asked us to make his camera, he asked for it to be as small and as unobtrusive as a Super-8 cam-

era, and he is quite happy with the result. As you have seen in the definition tests which we have shown, the Aäton 8-35 shows very high definition. We made tests with the Arriflex 35BL and the Aäton 8-35, both at the same time and using the same Zeiss lens. The only difference seems to be that the Aäton images are perhaps slightly darker, which is to be expected, given the fact that it has a beam-splitter and a 153-degree mirror. One could not imagine that it would give the same results as a 180-degree mirror with a reflecting shutter. As indicated by the steadiness test, the steadiness of the camera is very good.

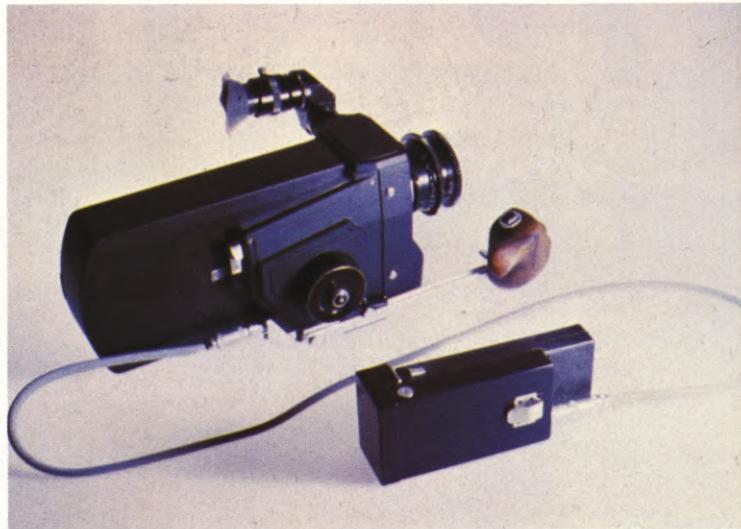
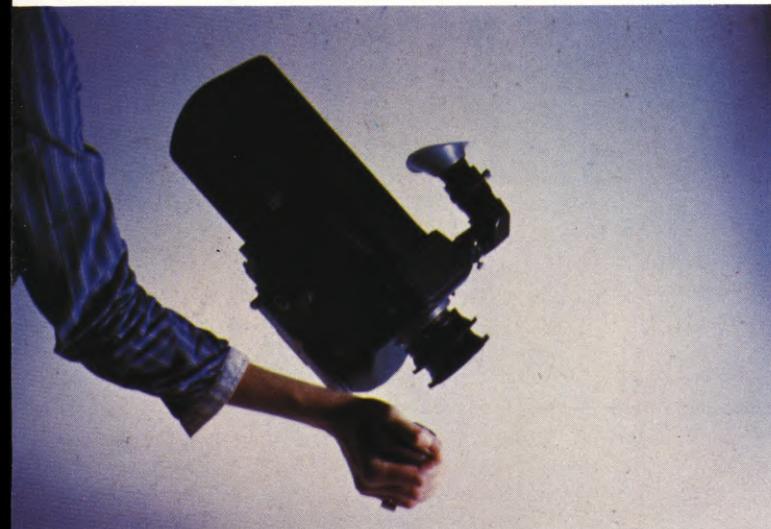
Since the objective was to make the camera as compact and lightweight as possible, we chose a 200-foot displacement-type magazine. Again, to keep the weight of the camera as light as possible, we decided not to have the electronic circuits nor the batteries on the camera, as we are now doing in the 16mm field. The Aäton 8-35 camera weighs five kilos (just over ten pounds) with the lens and 200 feet of film. A 400-foot coaxial magazine will be available later.

The power package incorporates the electronic circuits and the battery. The power consumption of the camera is 1.5 amps, which means that the camera can be run for three-quarters of an hour on the small battery. This is possible because of a very high-efficiency system that involves the main motor and a second motor for the take-up. This gives us exactly the amount of energy we need to run the film into the magazine, which keeps the power consumption very low for a 35mm camera.

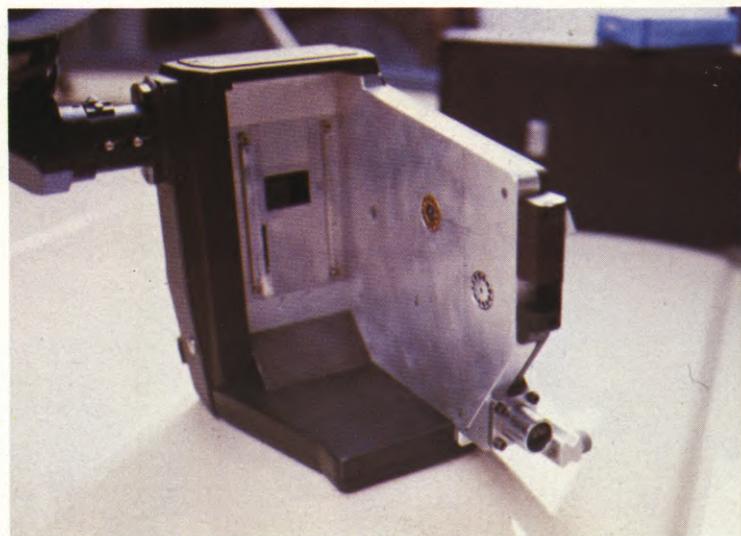
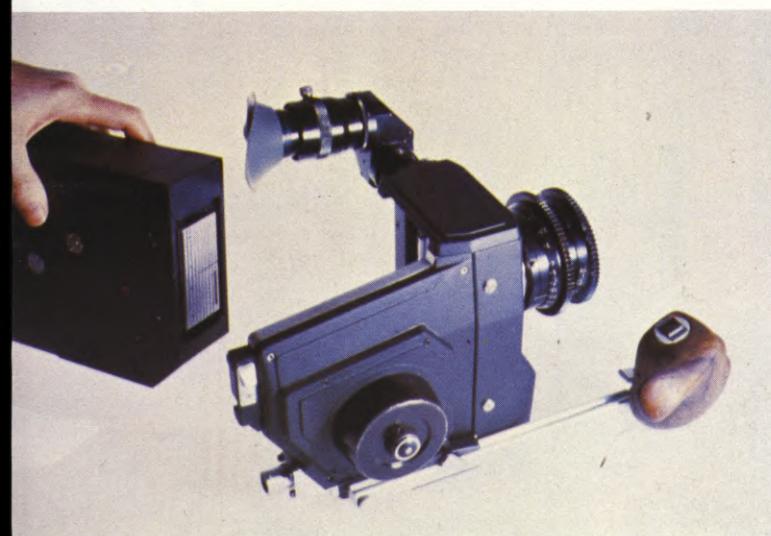
There is a 6-36 frame-per-second variable speed capability on the camera.

There are two rear pressure plates—one for the claw, the other for the picture. There is quite a high degree of pressure, which maintains the film very flat and in a straight line. This method has been well-proven in our design for the Aäton 16mm camera, resulting in a steadiness which is comparable to that of the Mitchell camera.

The independent drive clutch system for the second motor that governs the take-up adapts automatically to the amount of torque necessary for a 200-Continued on Page 899



(LEFT) The lightness of the Aaton 8-35 camera is demonstrated here. It weighs 5 kilos (roughly 11 pounds) with the lens and 200 feet of film. It also has a very compact silhouette in this configuration. (RIGHT) In order to keep the camera as light and compact as possible, the decision was made to incorporate the electronic circuits and battery in an external power package. The camera can be run for three-quarters of an hour on the small battery.



(ABOVE LEFT) In order to change magazines, one simply presses a button and the magazine slides off on the left side of the camera. The motor that governs the take-up adapts automatically to the amount of torque necessary for either the 200-foot or 400-foot magazine. (RIGHT) The camera is designed to accept either a 200-foot displacement-type magazine or a 400-foot coaxial magazine. There is quite a high degree of pressure in the plate, which maintains the film very flat and in a straight line. (BELOW) Famed Swedish cinematographer Rune Ericson tries the new Aaton 8-35 camera on for size. Mr. Ericson is European representative for the Aaton camera.



THE FILM STORY

Continued from Page 879

simultaneous display to increase exposure and profits—all ways that can influence market saturation.

Over the last ten years, American business has multiplied its investment for hardware and software in motion picture and other forms of audiovisual communications—for such things as employee communications and dealer training. The potential in these areas has grown so fast that it now equals, in dollars, the total of what the entire market in audiovisuals amounted to about 10 years ago.

Part of this growth has been in the area of multi-image productions. We're just beginning to see an explosion in this type of activity. Motion pictures have a definite place in it.

Closely associated with the 16mm market are the documentary film producers. There are literally thousands of them setting up cameras around the world . . . using film to make their statements about the environment, the human condition . . . or any number of subjects. They underscore the fact that we're just beginning to scratch the surface in realizing the potential of 16mm as a communications tool.

But if we were to stick strictly to the saturation argument, we could find another of its flaws when we look at home entertainment systems. Consumer video cassette recorder sales have already passed the 500,000 mark in the United States. Surely, these units are going to open up vast uses for film-originated materials.

Videodisc is waiting in the wings with its own set of advantages and appeals. It should be the next entertainment system to catch fire.

Television projection systems are slowly breaking out of the novelty mold and seeing increased use in the home as well as in commercial establishments.



The "instant playback" capabilities of videotape fill a real need in certain types of shooting. (BELOW) The TV industry is just now changing from 2-inch broadcast quad recorders to a new generation of 1-inch analog recorders. If forecasts are correct, there will be yet another generation of 1-inch digital recorders.



(LEFT) Tape re-use was to be a cost-saving factor, production material could be erased and the tape used over and over. But this rarely happens, because each producer is reluctant to commit his baby to used tape. He wants to record his creation on the very best (new) material. (RIGHT) Huge libraries of TV material are even now accumulating, which will have to be jacked, stored or transferred. Transfer from 2-inch to 1-inch tape or film will be a mammoth task.



The local pub operator will hang his head in shame if he can't offer patrons six-foot-wide televised pictures of the local soccer matches. You can bet those screens will also carry a lot of motion picture programming.

Super-8. While it is normally thought of as an amateur product, there is a tremendous amount of Super-8 being used for various types of release, regardless of subject matter—whether for entertainment, training, or education. It's a further outlet for films shot on a wider format.

And, of course, there is cable TV—not yet living up to its promise, but still active and providing a desirable service. Its potential is there, but the various companies involved have to do a better selling job and keep prices in a popular range.

The big changes that home entertainment systems will bring to the marketplace will be felt by broadcasters. Programming will be more selective and time-variable. With home video recorders capable of programmable recording times, there is no reason why broadcasting should not go on all day and all night to relatively small audiences covering wider selections of topics and events.

Our point, of course, is that the growth forecast for any of these new uses for motion pictures overwhelms any idea of market saturation.

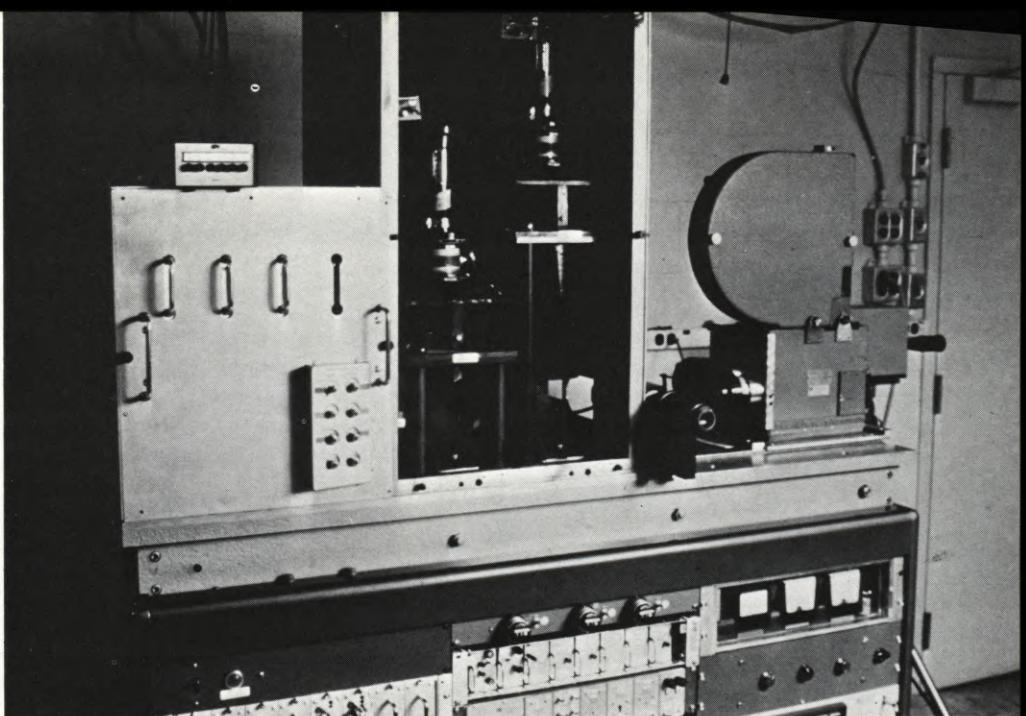
Now, it's possible that the movies that will be used on these new systems in the 1980's might originate on some electronic medium. But it's much more likely that they will be on film. All of the artistry and craftsmanship of moviemaking has been built up around film. The center of gravity is there. And, in my opinion, it will remain there, as moviemaking continues on its path of development.

That brings us to the basic *misimpression* underlying the repeated promises of the tape take-over that has been "imminent" for some 20 years now. The misimpression is that film is worn out, dead in the water, while video systems are stroking by at a furious pace. It overlooks the real facts of what has been happening in both fields.

During the 20 years I'm talking about, at least 38 new or improved motion-picture film products have been introduced by Kodak alone.

We recently introduced two new Eastman color print films with improved dark-keeping qualities. Eastman color LF and Eastman color LFSP print films are expected to be of special benefit to libraries, and historical and archival collections.

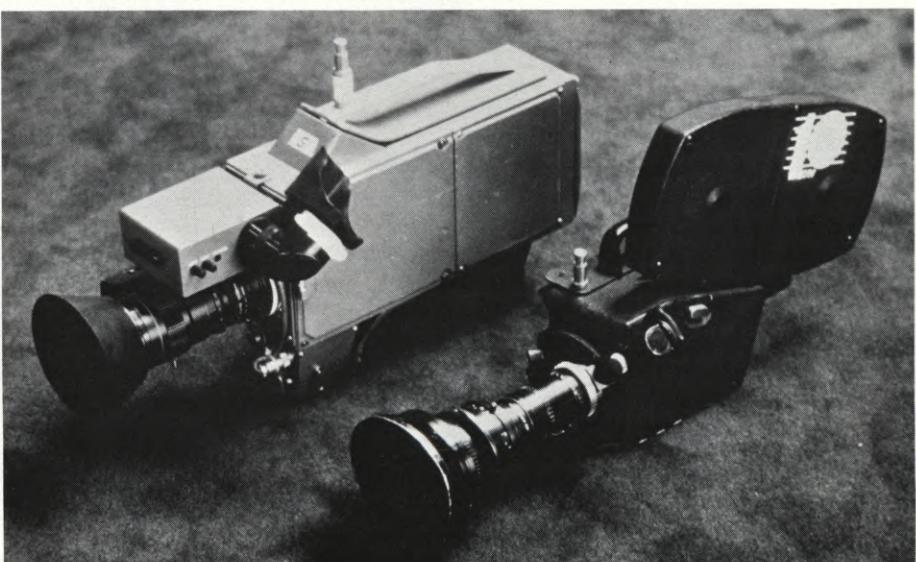
Many of you, I am sure, are aware of our Academy Award winner, 5243. 5243
Continued on Page 932



Electronic technology and tape formats are changing so fast that the tape-to-film transfer business is booming. Lab people report that a number of their video customers are transferring to film, so that they can later transfer back to tomorrow's technology, whatever the electronic standard may be.

- CAMERA MOBILITY
- EDITING CONVENIENCE
- GREATER INFORMATION STORAGE POTENTIAL
- STANDARDIZATION
- LOWER COST

(ABOVE) A list of advantages offered by the photographic medium in programming. (BELOW) However, both video and film have their respective advantages and it appears that both media are going to be around together as long as they have something to offer the user. Creative co-existence is the order of the day.



THE NEW MOVIECAM 3N CAMERA

Film 79

Shown in prototype form at both FILM 77 and Photokina '78, the MOVIECAM 35mm camera in its Model 3N incarnation emerged as a finished product during FILM 79. Due to a shortage of available exhibition space at the Royal Lancaster Hotel, the MOVIECAM 3N was shown privately at the Eucam agency in Wardour Street and caused a sensation when it became known that this latest model of the camera operates at the incredibly low noise level of 17.5 dBA—with film!

In appearance the MOVIECAM 3N is a handsome piece of modern sculpture, with an irregularly hexagonal body and a rakish back-mounted magazine—all of which adds up to an ergonomically comfortable design for hand-held operation.

The handsome new MOVIECAM 3N camera was shown in early prototype form at FILM 77. In the past two years—a very short interim for major camera development—many significant changes have taken place. Now with its design “frozen” for production, it is an instrument of outstanding sophistication and versatility—light in weight as a hand-held camera, very substantial as a studio camera, and with several unique features that are most impressive. Its look is strictly “space-age”—with electronics to match.

A sleek new camera for studio or hand-held use that runs at the incredibly low noise level of 17.5 dBA and is so sophisticated that it diagnoses electronically the cause of any malfunction

The camera looks like something new and different—and it is.

The MOVIECAM 3N (with 500 feet of film in the magazine) weighs 27 pounds and features a completely new BLN compensating link movement. Double transport claws and twin registration pins insure smooth pull-down, as well as a high degree of frame-to-frame registration. It is also mainly this new movement that is responsible for the phenomenal 17.5 dBA noise level of the camera when it is pulling film.

“We didn’t purposely set out to get the camera to run that quietly,” says Fritz Gabriel Bauer, designer of the MOVIECAM. “It just happens that this new movement makes very little noise.”

In terms of electronic sophistication,

the MOVIECAM 3N rates in the “space-age” category, since just about everything on it that could be automated has been.

Following is the manufacturer’s description of the camera:

The new MOVIECAM 3N is a trend-setting modular-system-designed 35mm camera for use in the production of theatrical and television feature films and television commercials.

The 3N incorporates all of the professional features required for theatrical filming and introduces many new features and accessories unique only with the 3N MOVIECAM. Some of its exclusive features and accessories include: Digiclapper, built-in slating system . . .



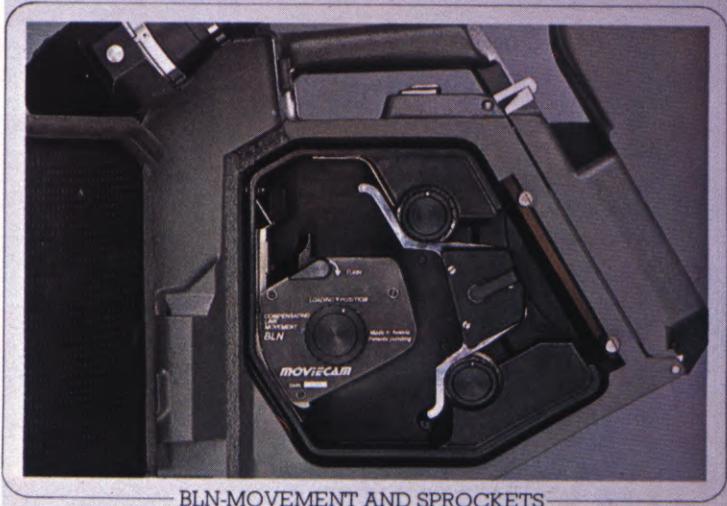
OPERATIONAL CONTROLS



HI-SPEED LENSES AND ZOOMS



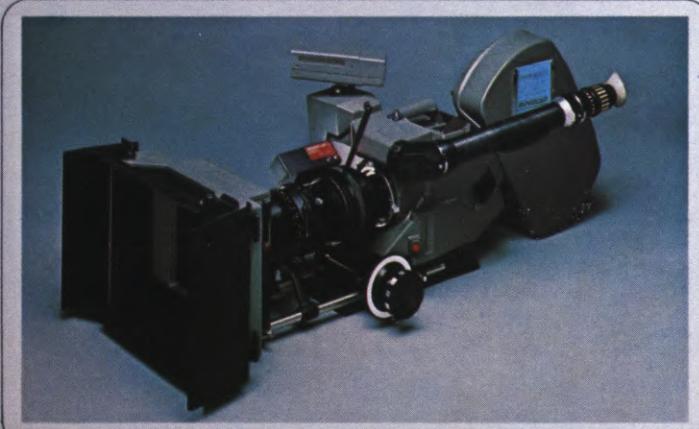
HAND HELD OPERATION



BLN-MOVEMENT AND SPROCKETS



MOVIECAM SYSTEM



MATTE BOX, FOLLOW FOCUS, LONG VIEWFINDER



HAND HELD OUTFIT



150 m/500 ft DISPLACEMENT MAGAZINE



COMPUTERIZED REMOTE CTRL'S.

Moviespeed System, which allows the camera speed to be changed during filming, while maintaining exposure control . . . EBU Time Base Code, which prints real-time on film for editor's reference . . . and Microprocessor DC motor-control, which permits the camera to operate from 24V DC or 110/220V, 50/60 HZ.

MOVIECAM 3N's sound level is less than 18 dBA (measured by AKG, Vienna, with film in the camera) making it the quietest 35mm feature production camera in the industry.

Some of the unique features of the MOVIECAM 3N are truly ingenious.

For example, the *Digiclap* built-in automatic slating system optically prints a pre-dialed scene number onto the first 100 frames of each scene in the middle of the frame, which insures easy legibility during projection. The savings in time and film stock made possible by this feature can be considerable.

One of the several plug-in modules available for the MOVIECAM 3N is the *Moviespeed System*, which allows the running speed to be changed at programmed rates during the shot. For example, a pole-vaulter can be shown at normal speed running up to plant his pole. As he does so, the frame rate smoothly changes and he soars through the air in "slow-motion," *without even the slightest variation in exposure density*. The time interval in which the acceleration or deceleration is to take place can be pre-set on switch banks. Control is affected by means of a microprocessor, which also makes the appropriate exposure corrections via the automatic iris control servomotor coupled to the lens-iris ring.

The *Moviespeedbox* is a control unit with microprocessors and switchboard to be mounted on the camera, which controls the *Moviespeed System* in forward and reverse modes, plus single-frame operation.

The effective application of the *Moviespeed System* to sports subjects is obvious, but it could also prove valuable in the filming of certain technical and scientific subjects, to say nothing of special effects for feature films.

Another plug-in module available for use with the MOVIECAM 3N is the *EBU Time Base Code-Box*, which mounts on the side of the camera and makes it the first 35mm camera that can print real time BCD code onto film, thus permitting automatic synchronization on editing tables.

A third plug-in module—and one that seems almost "magic" in its function—is the *Computer Diagnosis Module*. Mounted on the side of the camera, it is an electronic measuring device which supervises and controls all camera functions, the running speed and power consumption. If there is a failure of any

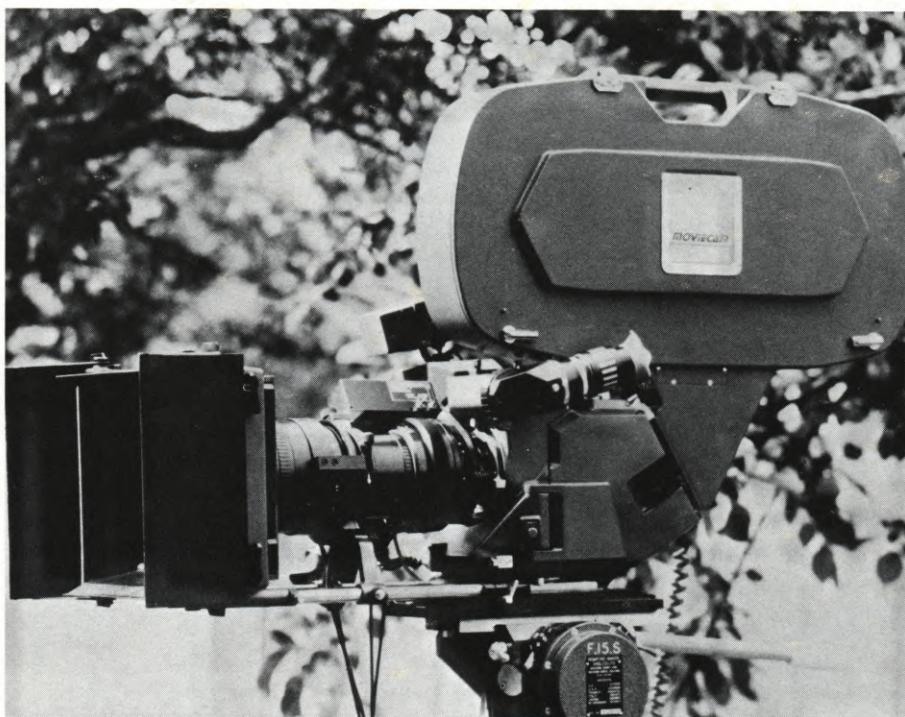
electronic component, the *Computer Diagnosis Module* immediately indicates the malfunction and identifies the faulty component by number. Presumably repairs can be made (without time-consuming tests) simply by quick replacement of the failed component with a new one.

Another fail-safe feature that should prove valuable is the camera's flickering control display, which indicates incorrect operation or buckle trips.

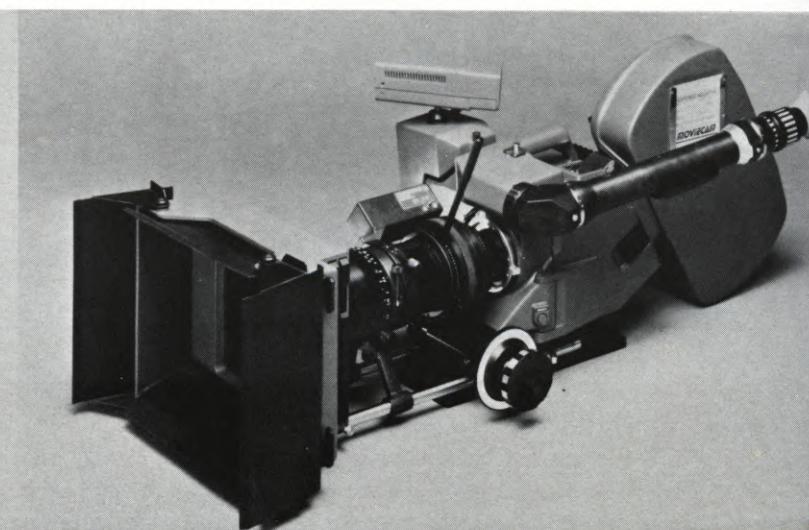
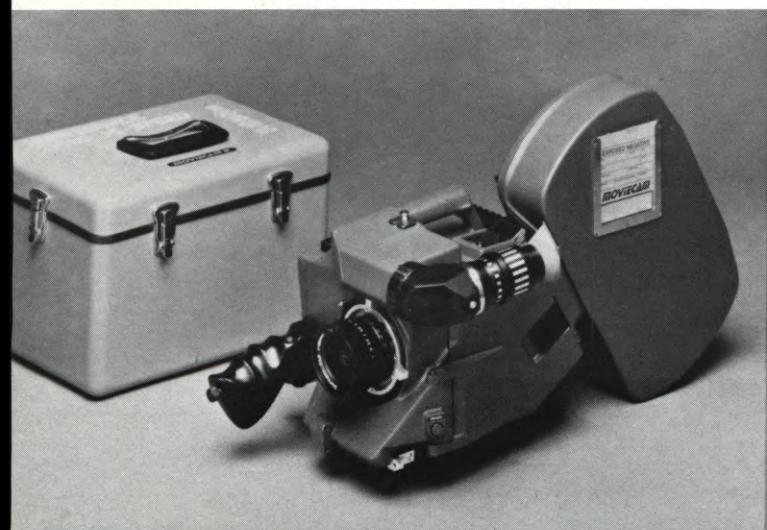
Interesting also is the phase shifter for synchronizing film with any TV monitor.

In its more conventional aspects, the MOVIECAM 3N has been designed for practicality. For example, its standard BNCR lens mount makes it possible for a vast range of existing lenses to be accommodated without modification.

MOVIECAM's reflex mirror shutter is variable in 10° increments from 0° to



(ABOVE RIGHT) The MOVIECAM 3N with top-mounted 1,000-foot magazine. (BELOW LEFT) MOVIECAM 3N in hand-held configuration, with 500-foot magazine, fixed focal length 50mm lens in BNCR-type lens mount and adjustable hand-grip. It weighs 27 pounds with 400-foot load. (RIGHT) MOVIECAM 3N in a studio configuration with finder extender, video system and "Video Assistant", production matte box and base plate, zoom lens and zoom motor. 500-foot magazine shown back-mounted.



176°, with the mirror stopping automatically in viewing position. Interchangeable ground glasses and aperture plates are available for all standard film formats.

Like several other of the most sophisticated new cameras on the market, the MOVIECAM 3N incorporates provision for a video system. In this case it is equipped with a Newvicon television pick-up tube that provides a high-contrast display of the ground glass image, which can feed TV monitors and a video tape recorder.

This integrated video head is controlled and powered by an external "Videx" power supply, which is easily attached to the camera. The "Video Assistant," a small (1½") monitor attached to the camera, serves to make the focus-puller's work easier and more accurate.

The new MOVIECAM 3N has a myriad of other sophisticated features which, although not unique to it, add up to a film-making instrument of great versatility. Mr. Bauer and his colleagues are to be congratulated on arriving at such a finished product in so relatively short a time.

For further information on the MOVIECAM 3N camera, contact: Moviecam-Kinematographische Geräte Gesellschaft m.b.H., Wolkersbergenstrasse 14, A-1130 VIENNA, AUSTRIA. Tel (0 22 2) 85 01 65, 85 90 11.

MOVIECAM 3N is distributed in the United States and Canada through Moviecam Corporation of America, 625 West 54th Street, New York City, N.Y. 10019. Tel. (212) 757-0906. ■

TECHNICAL CHARACTERISTICS OF THE MOVIECAM 3N CAMERA

Film Format: 35 mm

Dimensions of Camera:

(with magazine 150 m/500 ft):

Height: 310 mm/12.2"

Continued on Page 941

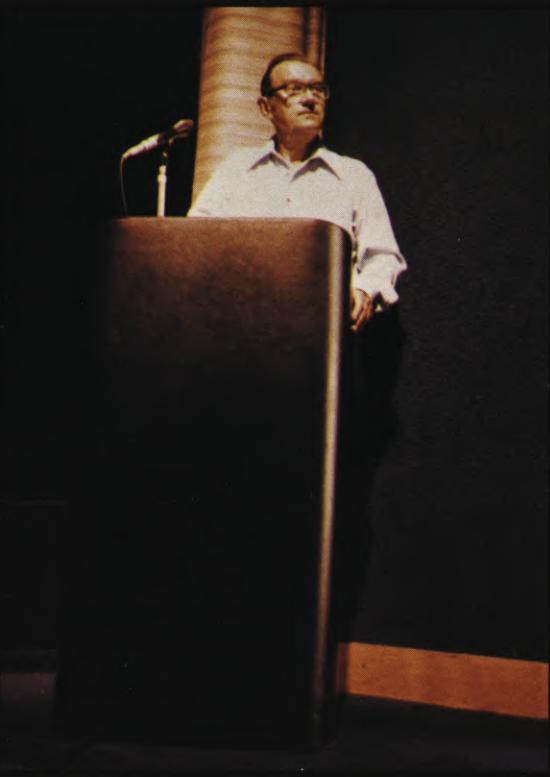
(LEFT) Plug-in MOVIESPEED CONTROL module allows the camera's running speed to be changed at programmed rates during the shot, without variation in exposure. The time interval for acceleration or deceleration can be pre-set on switch banks. Control is affected by means of a micro-processor which makes appropriate exposure corrections. (RIGHT) The COMPUTER DIAGNOSIS module is an electronic measuring device that supervises and controls all camera functions, the running speed and power consumption. The module immediately identifies the component responsible for any electronic malfunction. Following FILM 79 debut, MOVIECAM 3N was introduced to the industry in New York August 15-16 and in Hollywood August 20-21.



The MOVIECAM 3N is ergonomically designed to fit comfortably onto the shoulder for hand-held work. (BELOW) H. "Scoop" Clapp, MOVIECAM of America Corporation President, shown with Fritz Gabriel Bauer, designer of the camera and Director of MOVIECAM GMBH. Mr. Clapp is sole distributor of MOVIECAM System equipment in the United States and five other western countries.



(RIGHT) David Samuelson demonstrates Panavision's impressive new Panastar Panaflex high-speed camera in its first public showing. The biennial BKSTS Conference in London attracts delegates from all over the world—more than 50 countries this year—and enables them to keep abreast of the latest technology.



This year the British Academy of Film and Television Arts joined with the BKSTS in presenting three very special programs, not the least of which was the fascinating "Special Effects '79" Seminar, presented twice on the afternoon of July 5. It was chaired by Academy Award-winning Director of Photography Oswald "Ossie" Morris, BSC (LEFT), and the panel included (RIGHT) Cinematographer Denys Coop, BSC, Colin Chilvers and Derek Meddings, all three of whom were among the six technicians awarded Academy "Oscars" for their extraordinary special effects for SUPERMAN. The program was enlivened by the screening of outstanding special effects sequences, ranging from the original KING KONG to MOONRAKER.



The traditional wind-up to the Conference in London is the black-tie Banquet, held this year in the Grand Ballroom of the London Hilton Hotel. (LEFT) BKSTS President R.F. Ebbetts and his party prepare to be seated at the head table. (RIGHT) Henry VIII is seated, as his courtiers stand and sing his praises. The troupe of mimes and singers provided class entertainment, but it was the spirited Royal Artillery Band that stole the show.



REPORT FROM FILM 79

Continued from Page 884

MOONRAKER. It is a most interesting seminar and afterwards I enjoy a warm reunion with all four gentlemen who have participated.

Meanwhile, back at the Royal Lancaster, the Equipment Exhibition is drawing considerable attention. HIM Lighting—not so long ago considered to be a really exotic development—is everywhere to be seen. Among the many items of equipment on display, there are, in my opinion, four exceptional pieces.

The first of these is the fascinating new ARRI Image Stabilizer (see Page 896), which was tantalizingly hinted at during *Photokina '78*, but not shown. Now it is right out in the open and it turns out to be a compact, lightweight accessory that mounts in front of the taking lens of the camera and very effectively smooths out the jolts and vibrations that plague most cameramen, especially when hand-holding. A most impressive piece of equipment that should gain wide acceptance.

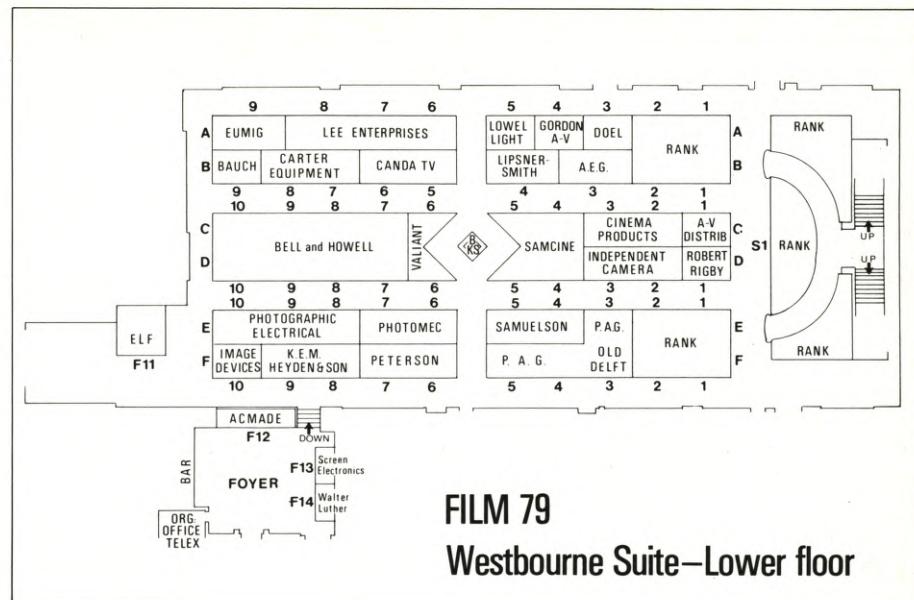
But the biggest news—not equalled at the most bounteous *Photokina*—is the fact that there is not one but THREE new 35mm cameras making their debuts here.

The first is the startling Aaton 8-35 35mm Camera, hardly larger than an Eclair ACL or Arriflex 16SR with its 200-foot magazine mounted, it is a comfortably hand-holdable instrument and quickly becomes the conversation piece of the Exhibition (see Page 922).

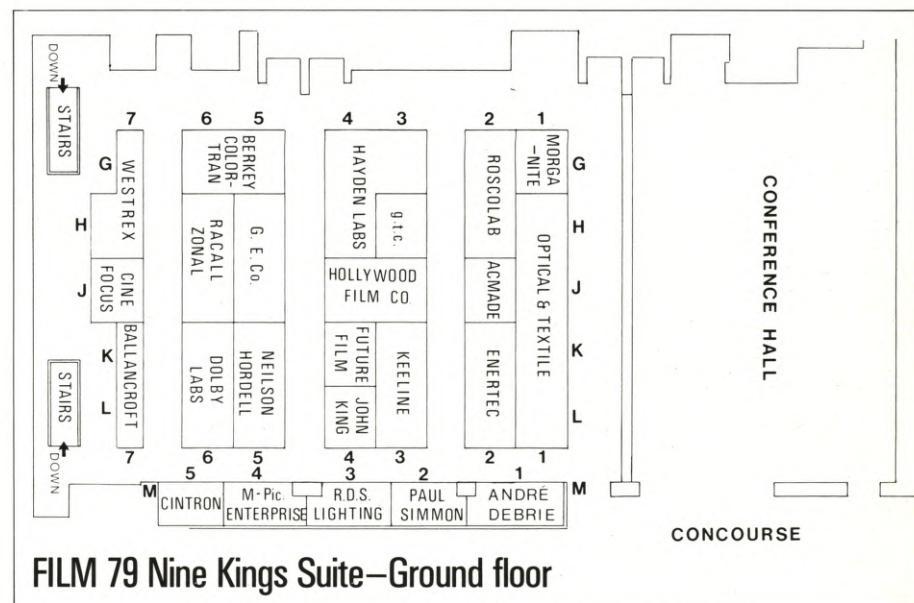
The second is the new Leonetti-Wilcam ULTRACAM-35, which I had seen sneak-previewed a few months earlier at an A.S.C. dinner meeting in Hollywood. Even though the camera had been used on such productions as THE GREEK TYCOON and APOCALYPSE NOW, this marks its formal unveiling to the public. It is a beautifully engineered camera with many interesting features (see Page 900).

The third new camera to be shown is the MOVIECAM 3N. Actually, due to lack of exhibit space at the Royal Lancaster, it is being shown by invitation at the Eucam Agency in Wardour Street. I make the jaunt down there expecting to see the same advanced prototype that was on display at *Photokina '78*. But great things have happened to the camera since then. The design has been refined and "frozen" for production and even more sophisticated features than before have been incorporated—most notably an entirely new movement, which makes possible the incredibly low noise level of 17.5 dBA—with film! (See Page 926.)

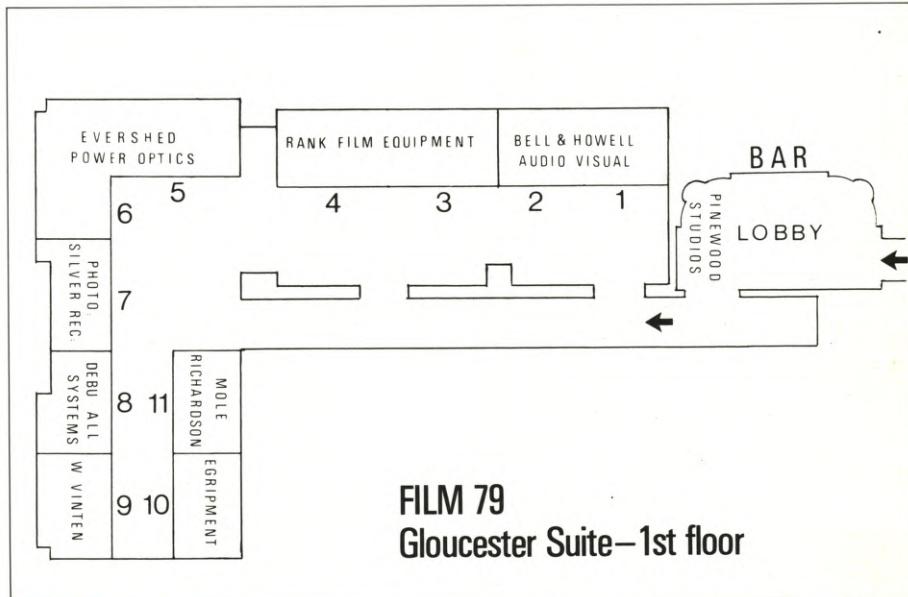
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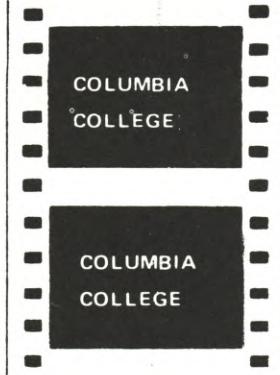
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THE FILM STORY Continued from Page 925

is a duplicating color movie film with superior sharpness, tonal scale, and dye stability. I think it's a good example of our willingness to continue a costly process of developing new films, a process that has been part of our commitment to motion pictures for more than 50 years now.

Until electronic cameras and recorders become a good deal less costly, a lot lighter, and shed their umbilical cords, they are likely to see limited use in location shooting.

The electronic camera is not a recorder; that job is still handled by a second piece of equipment that is inseparable from the camera.

The film camera is the recorder. It has the film inside it.

We all recognize that considerable progress is being made in reducing the weight and bulk of electronic equipment—making it more portable and mobile. And, I'm sure that efforts are underway to improve the image quality of tape. As of now, however, it is still not comparable to the film image.

We talked earlier of standardization: the physical dimensions of 16mm film have not changed since the format was introduced in 1923, whereas tape is still striving to find its standard.

We are just now changing from a generation of 2-inch broadcast quad recorders to a new generation of 1-inch analog recorders. And if the forecasts are correct, there will be another generation of 1-inch digital recorders.

Any change in electronic camera design usually means a new system. Last year's camera is not as up-to-date as this year's and we feel obliged to buy the very latest equipment. Any good businessperson knows that amortization should, therefore, be taken over a very short period of time. It isn't.

It is in this area of economics that many a mismatch has occurred.

We see, for example, that the inherently higher cost of electronic equipment is ignored or not allowed to enter the cost picture. Logic seems to give way to emotion when buyers are saying, "We want our electronic toys and we don't care how much they cost!"

Well, that's nice if you can afford it. But consider that, by contrast, the film camera, in terms of equipment investment, is updated simply by putting a new roll of film in it. No new hardware. No overnight obsolescence.

Another area where we've seen a mismatch between fiction and fact is in the reuse of tape. Tape reuse was to be a cost-saving factor; production material could be erased and used over and over.

But again, reality tells us differently.

A producer is reluctant to commit his baby to used tape. He wants to record his creation on the very best material. And no compromises, thank you.

Conversely, you reuse tape only at the expense of losing program material or of transferring it to film. Many historic and valuable programs have been lost because the studio could not afford to tie up the tape.

Which leads me to a major point of concern because I'm hearing about it from our friends who have gone into electronic production:

Our industry — and I use the term broadly because we're all in this communications boat together — is going to be facing a very real problem.

Huge libraries of material even now are accumulating which have to be either juked, stored, or transferred. If they are going to be transferred, it will be a mammoth task. It would mean a whole lot of new 1-inch tape to replace 2-inch tape.

It means a mammoth task even to transfer to film which would then, at least, become a standard which could be used forever.

Even if tape studios want to keep their existing libraries, they would have to maintain compatible equipment and that equipment is obsolete. They will have to go to a museum to play their masterpieces.

We are seeing the dilemma being partially resolved in the amount of tape-to-film transfer business going to the film labs. Lab people tell us that a number of their video customers are transferring to film so that they can later transfer back to tomorrow's technology, whatever the electronic standard may be.

As for *myopia*, my research associates tell me that it is very easy to slip into the short-sighted viewpoint that the quality standards of a whole industry can be set by laboratory demonstrations.

I could walk you through the laboratories in Rochester and show you some of the things going on in lasers and film characteristics, for instance, that would probably knock your eyes out. And there we are again—right back at *myopia*. We tend to get wrapped up in our own promising developments.

Life in the laboratory just isn't the same as life in the real world. It takes years of on-the-job usage to work all the problems out of a system, and film certainly has withstood the test of time.

The misassumption that I had in mind is the fairly common one that technological progress is a process of replacement.

We come by it probably on the basis of a few outstanding innovations:

The automobile for the horse and

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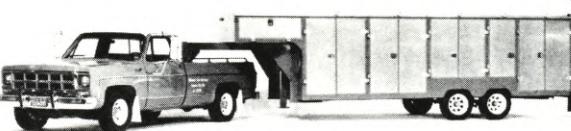
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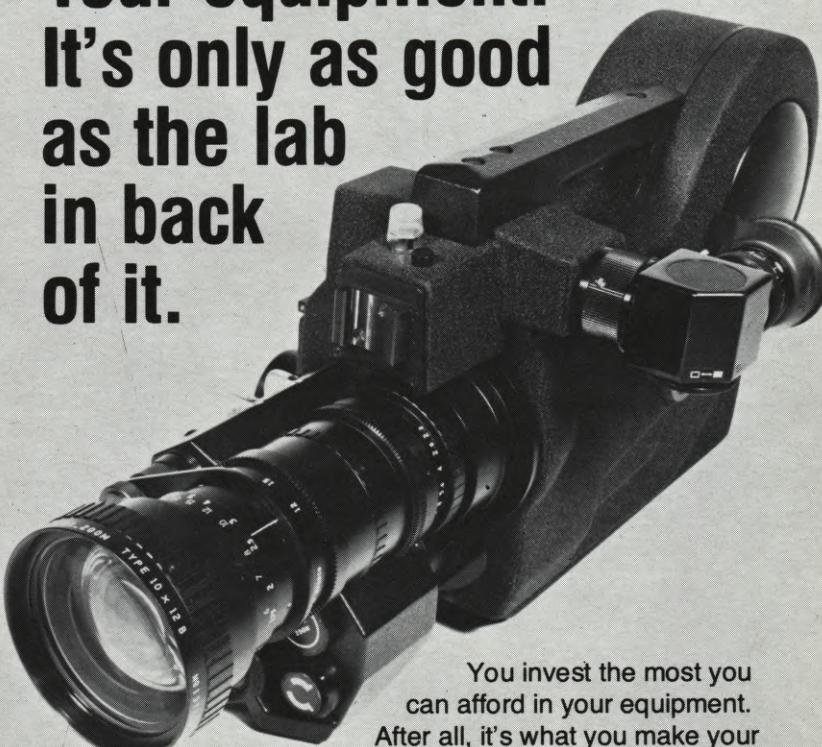


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If you took a broad survey of a hundred or more significant developments of this century, I believe you would find that they were more additive than subtractive. That is, new things coming out establish themselves along side what was already there, rather than pushing them out.

For example, I can remember that about the time I was in school, one of the big events was the introduction of the fluorescent lamp. It gave more light with less wattage. Naturally, the fluorescent was going to put the familiar incandescent lightbulb out of business.

What actually happened, of course, was that not only did the fluorescent and incandescent lamps do well, but whole new generations of lamps came along—sodium vapor, mercury vapor, quartz iodide—each finding its own place because of distinct advantages.

Moving to more recent times and to an area that I'm a little more familiar with, I can tell you that the years which saw the widespread acceptance of instant photography were the period of greatest growth in history for conventional photography.

One could cite many other instances in which new technology moved in alongside existing technology with the two getting along just fine.

The misassumption that progress is necessarily equated with replacement has given rise to what I believe is the *outright fallacy* underlying the Great Debate. It is that the future of film and tape is necessarily an "either-or" proposition.

It is true that there are certain applications within the broad technology of repeatable experience where one or the other has clear-cut superiority.

In the early days of television, it was my company that brought out the process that gave birth to the so-called "hot knee." The sight of a still-damp original being slapped on a projector for playback was never quite our notion of the ideal application of film's best characteristics.

The instant playback capabilities of videotape fill a real need here. For this one clear-cut purpose, tape can do a job for which film was never really suited.

On the other hand, for large screen projection, where resolution and image sharpness are the criteria, film is, today, the only suitable medium. The high quality of that magnificent image undoubtedly helps draw people to the movies. And that's not taking anything away from the imagination and creativity that producers, writers, directors, and effects people are bringing to the artistic side of the business.

Meanwhile, between the extremes of

technical properties offered by tape and film is a wide range of production, distribution, and show situations in which both media present the user with advantages, whose relative weight depends on the priorities of the moment.

The electronic medium has going for it immediate access, some reusability of the raw material, more control of the output. The photographic medium offers greater camera mobility, more practical convenience in editing, more information storage potential, international standardization, and lower cost.

Users are going to want all these characteristics on different occasions. It looks as though both media are going to be around together as long as they have something to offer the user. We aim to see that photography is a vital contributor to that mix for a long while to come.

During 1978 and 1979, Kodak will have spent more than 800 million dollars on research and development. As you might imagine, a share of that money is going to the study of light sensitive materials.

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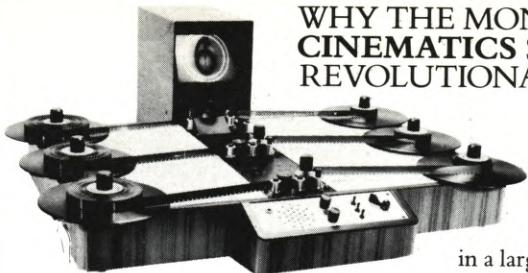
We are learning how to improve the exposure and process latitude of our films. We are learning more about the chemistry of dyes and dye formers for better color materials.

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divide a traditional motion picture sound track and thereby record and play back stereo sound without affecting monaural playback. We publicly disclosed the technique. Dolby Laboratories, in turn, developed a stereo system now used in many theaters, and on order in many more.

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Italy is really coming around. In spite of adversities, the economy is bouncing back. Theater business is very good.

France has always been a movie-going country—very visually oriented. The same thing can be said about Germany and Scandinavia.

And I don't have to tell most of you in this room what is going on in the United Kingdom. Film activity very strong. Lab business going great guns.

It is interesting that in a period when people were talking about the demise of film, there has been a renaissance. Theater attendance is up. The number of prints made from features, both in Europe and the U.S. is up. In the U.S., theater attendance brought in some \$2.8 billion last year.

But even more striking is the great percentage of program origination made on film for television—that has actually increased over the years.

So . . . in spite of a variety of new developments in electronics, a 100-year-old technology is alive and well and still producing improvements at a fairly fast rate. ■

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TECHNIQUES OF OPTICAL
TRICK CINEMATOGRAPHY
Continued from Page 916

The camera must be steady tested. The Mitchell camera with its pin registration system is an ideal camera. This system holds the film firm, located on registration pins, positively steady at the moment of exposure. Many high-speed S35 Panavision cameras from Samuelsons were used in the making of SUPERMAN with excellent results. The sequence on the railway line was a relatively simple optical involving only two elements which had to be split-screened with the use of complementary mattes. Many other opticals in the picture involved numerous components which, on occasion, had to be moved, tracked, zoomed or faded on the optical printer.

One of the most complex opticals made was the sequence early in the picture where the three villains were held captive by the council of elders of Krypton in a beam of light with revolving rings. When they were sentenced to eternal imprisonment a strange diamond-shaped object had to descend from space and collect them and take them into orbit around Krypton. John Barry's design for this, the Phantom Zone, was a diamond-shaped, flat object with immense depth. To create the effect of the actual collection meant shooting it in separate parts. Firstly, the villains waiting in the rings. Secondly, the empty Phantom Zone; thirdly the Krypton surface; fourth, the villains shot for their containment in the Zone after the collection and finally a spinning shot of the villains. This was done by spinning the camera, as to spin optically in an anamorphic process does not work. All these components had to be mixed together with roto-scope mattes to print the Phantom Zone over the Krypton landscape, dissolving one to another. This optical was achieved with CRI techniques which resulted in the highest possible quality.

Let us now consider how the film stock is manufactured, and how this can affect the making of optical special effects. An understanding of this can considerably assist the special effects cinematographer.

Eastman Colour Negative film is coated onto rolls of triacetate base which are about five feet wide and in multiples of 2000 feet long. Normally five or more rolls are coated in sequence, as a batch. Each of these parent rolls is slit into either 35mm or 16mm strips—the familiar strip number is the position of the strips across the original parent roll. The slit rolls are then distributed around a bay of perforating machines, (maybe up to twelve separate machines), where they

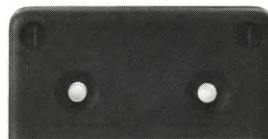
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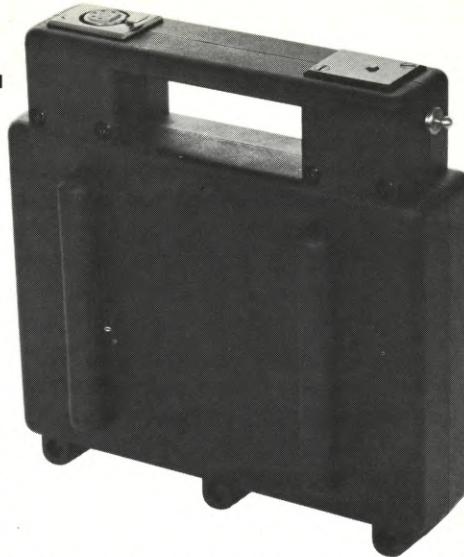
The Energy Set Battery uses nickel-cadmium cells fused together for low internal resistance. They're sealed into a resilient hard-rubber case. You can use the Battery with any camera that runs on 12VDC. It weighs 5 lbs, 2 oz.

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In this partial view of Charger, red and green lights are both on, showing trickle-charge mode.



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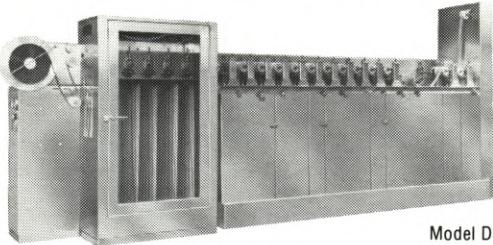


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are punched one frame (four pairs of holes, for 35mm) at a time. Finally, after a rigorous inspection, the perforated strips are cut down to length as required, and packed into cans. The labels are marked with the emulsion batch and parent roll, and the individual strip number.

The perforating process is extremely accurate—accuracies being of the order of tenths of thousandths of an inch, as defined by the international standard for Bell and Howell 1866 negative perforations, and the eight hole at a time punching operation is deliberately chosen to be consistent with the frame-by-frame camera operation.

In practice most of the perforating dimensions remain the same throughout the life of a manufacturing machine set-up. However, the hole size increases progressively throughout the life of the machine, as the back surface of the film wears away the die during the cutting process. The hole is therefore started at the lower end of the Standard tolerance range, and the machine is taken out for resetting before the top end of the tolerance range is reached.

From experience it has been found that the lower half of the permissible hole size is best for critical optical combination printing. Part of the control system that we have developed over the years involves visual checks of the perforations carried out in the camera room to select the best fit onto the pins of the camera.

The roll of film is put into a camera magazine, with the end protruding. Perforating machine information may be stamped onto this, and this information is noted. Four consecutive pairs of punched holes are then gauged, using a standard Mitchell pin, in the following manner. The film is held horizontally in a special clamp, and the pin is carefully inserted from below, a lens being used to ensure that the pin is presented with its sides parallel to the perforation walls. Holes are sought that will grip the pin snugly, and prevent it from slipping down under gravity (a small brass weight is fitted to its base). If one such pair of holes are found, these are marked and the film is returned to its can. When the roll is to be used, the camera assistant will lace it in the camera so that the register pin enters the actual marked hole.

Obviously, within the same consignment of film, there will be no point in gauging other rolls from perforating machines that gave large holes only, while those with "all o.k." holes will be gauged for preference.

Similarly, when 400' rolls are being used, those with the same roll and strip numbers will have been cut down from the same parent strip, and can be considered to be identical.

The method described is very much a "craft" operation, and is a form of go/no-go gauging, rather than an attempt at precise measurement, but its effectiveness has been very well borne out in practice.

It is well known that changes in humidity can affect the film dimensions, although the gauging system evidently incorporates sufficient latitude for the variations encountered in normal working conditions where humidity control equipment is a rarity, but an inexpensive relative humidity indicator is a good investment, to avoid gauging during periods of extreme humidity conditions.

Checking the rolls is a tedious process but extremely worthwhile, and we are indebted to Jack Greenfield, chief mechanic at Pinewood Studios, who so patiently advises on the stock. It has been found that about 80% of the stock checked gave snug-fitting perforations on at least one pair of holes. No stock that has been checked has fallen outside the British Standard, which is of great credit to the manufacturers and terms such as "good film" and "bad film" are at the very least misleading, as what we are referring to is the smaller fraction of the hole size distribution, which is found to be necessary for travelling matte work.

Clearly it is going to be safest to select the estimated number of rolls required for critical optical work as soon as possible after the batch of film has been received, as later in the production schedule you may easily be left with only the larger-hole fraction.

The nature of optical work relies upon the fact that, when two films are double-exposed together, neither one moves against the other. Our experience is that the full range of the British Standard tolerances for perforation hole size does not guarantee suitable stock for this kind of work unless some system of pre-selection is used. In the past the manufacturers have made attempts to select rolls of film destined for optical effects work at the time of manufacture. With the increasing demands for opticals this proved to be very difficult to control and give a guaranteed result, and each roll still required a test before use. Furthermore, by the time that a production has been planned it often happens that the batch of film that is to be used has already been finished and packed some months before.

In the course of work carried out during the making of SUPERMAN, a series of measurements on hundreds of perforating machine outputs indicated that with the general improvements in production controls that have come about in the last ten years, stock from any particular perforating machine (which can be identified

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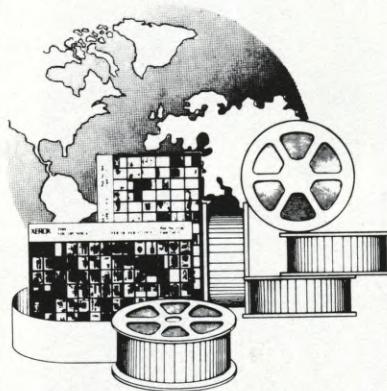
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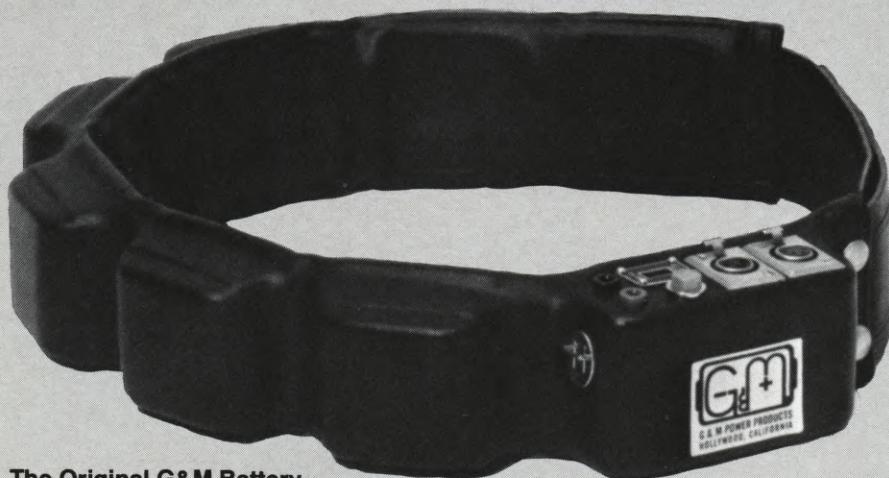
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from the information stamped and printed on the films) can be tested by gauging or by optical camera testing, and the result will be totally representative of all the output of the same machine in that production consignment, as this represents only a short time in the total life of a perforating machine set up. Furthermore, an analysis confirms that, on average, the 80% success rate of finding stock with at least one pair of holes in the lower half of the Standard tolerance range is supported.

It is comforting to know that a simpler and less tedious system is possible, i.e. testing one roll from each perforating machine used, and accepting without further tests all other rolls from a machine that gave a roll with "all-o.k." holes. For expensive set-ups like those involved in SUPERMAN, we are likely to stay with the assurance of gauging every roll, although the perforator identity can certainly be used to assist "pre-selection" of the rolls which will be gauged. The operation would become very much easier if the manufacturers could find a method of marking perforator identity on the outside of the can, thereby eliminating the need to open every one and sometimes even to have to process a piece from the end, to identify the machine. It certainly seems reasonable, however, that work with slightly less critical subject matter could be successful with the simpler selection method, and for scenes without optical combination work all film within the Standard tolerance is perfectly satisfactory. ■



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Continued from Page 929

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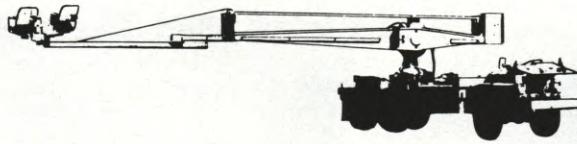
Shutter: reflex mirror, variable in 10° increments from 0° to 176°. Mirror stops automatically in viewing position. Interchangeable ground glasses and aperture plates for all standard film formats.

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Viewfinder: optical image via rotating mirror to ground glass. The viewfinder is rotatable through 360° while still presenting an upright image. An optional viewfinder extension can be supplied. The eye-piece is adjustable. Eye pieces for left-eye-viewing and with anamorphic viewing capability also available. Heated back lens of eye-piece to prevent condensation. Another special feature, "Movielite", illuminates the reticle on the ground glass with yellow light, making it easy to see the limits of frame even when shooting night scenes with dark background, where ordinary reticles can be almost invisible.

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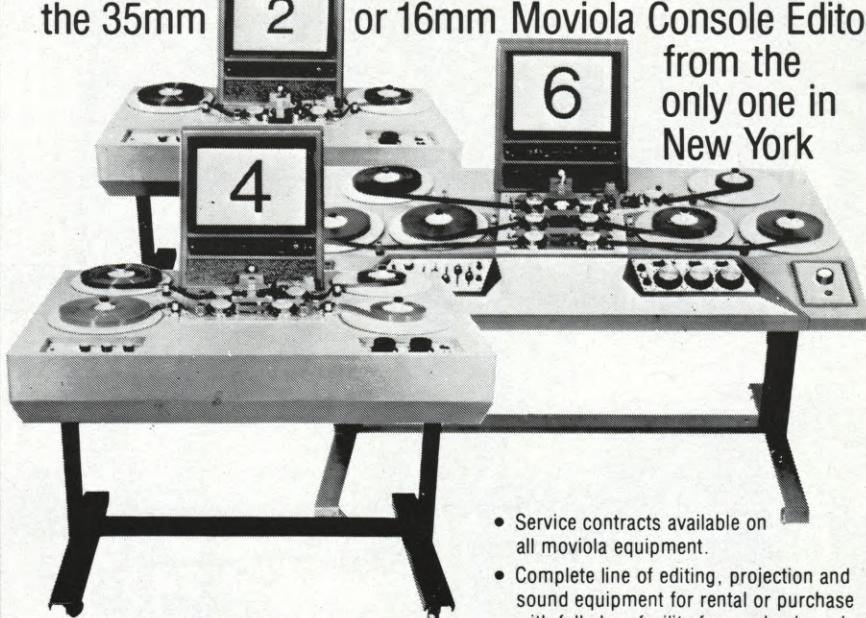
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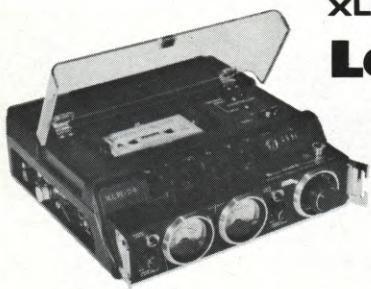
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SEEING IS BELIEVING Continued from Page 889

creases. People do buy colour receivers, but they were already viewers in black and white. All this supports my theme that people generally do not have absolute standards of picture quality. Rather, they require what they are accustomed to—the norm.

There is nothing remarkable in that conclusion, but an interesting extension of it is surprising. That is, that the norm is different for different media. If we briefly compare the two most familiar media which give us coloured moving pictures—film and television—we find large differences between the technical parameters that determine what the pictures look like. The primary hues, saturation, contrast ratios and definition are substantially different between film and television. Yet, when we are in the cinema we do not yearn for pictures having the appearances of television pictures. Nor do we wish for film characteristics when watching television at home.

If we think of definition in terms of elements per picture width, the resolution of the film system is considerably higher than that of television. Very few shadow mask receivers are capable of resolving more than 4MHz, which is about 400 elements per picture width. Expressed in the same terms, a 16mm film system will resolve at least twice that, and a 35mm film system very much more.

It is often stated that film requires higher resolution because it is a large screen medium. Television is, of course, often described as "the small screen," but the size of the screen is not important. What matters is the viewing scale. The distance from which people watch their television probably owes more to furnishing arrangements than optimum viewing conditions, but at the supposedly recommended distance of five times the picture height a cigarette packet or small postcard held at arms length will totally obliterate the screen. In other words, the viewing scale is that of looking at a postcard at arms length and, oddly enough, in many cinemas more than half the seats give this same viewing scale or smaller, if we ignore the wide screen aspect ratio.

The reasons for these large, inherent definition differences between the two media are very complex and partly historical, but what is of particular interest is how these inherent definition characteristics influence the way in which the media are used creatively. It is generally true to say that film exploits its wide screen and gives us many mid and long shots. Television, on the other hand, is most emphatically associated with talk-

Continued on Page 952



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ARRI IMAGE STABILIZER

Continued from Page 897

forces are less disturbing with the horizontally orientated camera systems and, for this reason, this position is to be preferred. After a short trial period, each user will quickly find out for himself the refinements that can be achieved through different system positions.

The maximal accelerative force which the system can withstand without incurring damage should not exceed "6 G". This is the expected stress limit which every Arriflex camera is built to withstand. Mobile cameras without tripod do not reach this level, but securely mounted cameras can reach and even exceed this level.

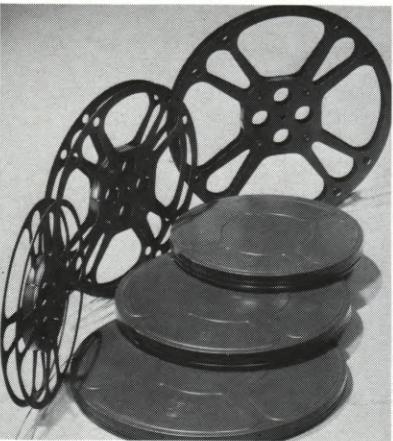
The stabilizing system compensates for vibrations with a frequency of one Hertz and above, which is the equivalent of suppressing one disturbing wave or more per second.

When using the image stabilizing system with fixed-focal-length lenses, angles of view up to 20° can be used without encountering vignetting. This means that, in the 16mm format, lenses of shorter focal length than 35mm should not be used. In the 35mm format, lenses shorter than 75mm should not be used. These limitations should not cause hardship, since it is when using the longer focal length lenses that image instability is most obviously accentuated and a stabilizing mechanism is most valuable.

There is practically no upper limit for the use of lenses with longer focal lengths. When using zoom lenses, the angle of view which can be accommodated is slightly reduced because of the larger diameter of the front element of such lenses; also, loss of angle of view must be expected when filming with lenses of speeds in excess of f/2. Conversely, with lenses of slower speed, a larger angle of view is available. Since today most subjects are shot with reflex film cameras or TV cameras, the maximum angle of view available can be seen through the viewfinder.

As mentioned previously in these pages (see *American Cinematographer*, December 1978), the effect on the screen produced by the new ARRI Image Stabilizer is not so much like that of devices such as the Steadicam or Panaglide which, in addition to eliminating vibration, also equalize larger movements very smoothly. It is more like that of the Dynalens, but its light weight, compact silhouette and freedom from the sensitivity of electronics would seem to make it a most convenient and desirable instrument for the cameraman—whether working in film or video—to add to his complement of tools.

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FILM IS GOOD FOR TV

Continued from Page 921

rostrum camera job. But so strong are my feelings about mixing textures that I used an electronic camera on a film rostrum bench.

Incidentally this Videogram was recorded on 2-inch VT and it can be played back on a Sony U-matic, the only means, alas, of hearing the stereo sound—but the disc is coming. RCA have already mastered the Videogram for demonstration purposes and Philips/MCA are, I believe, making it available soon on their disc system. The BBC transmitted it twice last Christmas and this Christmas you will be able to buy it in cassette form in the shops in mono. Roll on the video-disc!

And to show that there is no ill feeling, I am at the moment producing and directing a two-hour documentary for transmission on ITV in August called KITTY—RETURN TO AUSCHWITZ, and also a series of six one-hour documentaries for next year called WOMEN OF COURAGE—all for Yorkshire Television and all on film.

Quite a lot of the programmes I have made over the years have been historical documentaries, using large quantities of archive film. For instance, THE LIFE AND TIMES OF LORD MOUNTBATTEN for ITV, and more recently for the BBC, THE MIGHTY CONTINENT—a view of Europe in the 20th century. So I have some knowledge of how history has been recorded and preserved on film. 1897: magnificent footage of the Naval Review celebrating Queen Victoria's Diamond Jubilee. 1900: the Emperor Franz-Joseph reviewing his army. Amazing material—and so it goes on—the growth of cinema newsreels, Gaumont British, Pathé, Paramount, Universal and Movie-tone. A breed of cameramen who captured history, not merely for that week's newsreel, but for posterity. The "establishing long-shot", the details, the cutaways, the little observations which are gems in the world's archives today.

Then in the 50's television joins in. Rather clumsily at first, but with the advent of 16mm and the growing importance of the newscaster, a change began to take place. The mobility of the camera and the sound equipment (and faster film stock) set a new style. Get in quickly—shoot—get out quickly; rushes back to base; through the bath at quick speed; chop, chop in the cutting room; roll telecine; you're on the air—it's all terrific!

No need for the lovingly composed establishing long-shot anymore, it has been replaced by the newscaster: "Yesterday Mrs. Margaret Thatcher, the Prime

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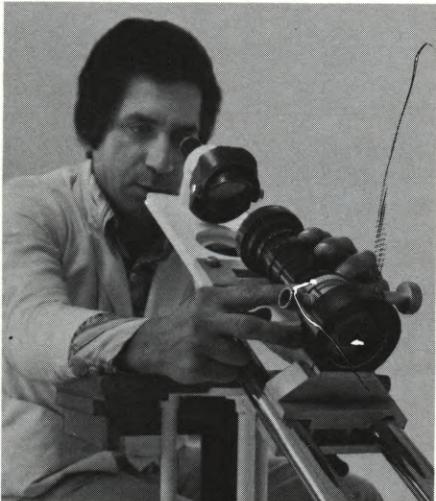
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Minister, attended a dinner in Tokyo together with other leaders taking part in the summit conference." Roll Telecine—cut to close up of Prime Minister with chop-sticks!

This gradual process of erosion in gathering and preserving today's news (and tomorrow's history) took place while, sadly, the cinema newsreels fell by the wayside. Television killed them off. Brave Movietone struggled on and finally packed up its cameras a couple of weeks ago. What does remain however are the rich film archives created by these companies. The money on the negative had, after all, been spent. An exposed neg is an exposed neg. But with a fine grain, dupe-neg and print that original negative could be earning its keep, because people like me will always want to use old archive film.

Television, albeit in a more haphazard way, also retains its master film in its own archives. With the help of the newscaster even the briefest coverage can live again.

Now, along comes ENG—Electronic News Gathering. Unlike film, tape can be used again. Tape is indeed being used again and again. As everyone knows, tape is very expensive, so there is every incentive to use it again and again and again. Are we therefore, in the last quarter of this century, entering an era of "throw-away" history? This is not an idle question. I sincerely hope that when you all meet again here at FILM '81 the relentless march of technology will have produced a technically superb and inexpensive storage system which will enable us to regain our much bruised sense of history. Students of the 21st century, I hope, will be able to look back on this century and say that we have not let them down.

But inspite of this retrograde step of which both are guilty, I firmly believe that film is extraordinarily good for television and television is very, very good for film. ■

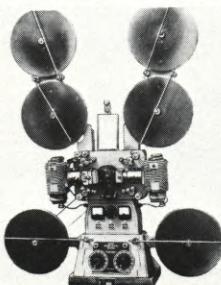
FILM OR VT TIME CODE? Continued from Page 881

the Public Broadcasting Service (PBS) has been developing a closed-captioning television system under contract to the Bureau of Education for the Handicapped, Office of Education, United States Department of Health, Education, and Welfare (HEW). In this system, captioned information will be transmitted as a data stream on Line 21 of a television picture in a hidden or closed caption form. This data stream will be converted into visible captions at a television receiver only if that receiver contains the necessary decoding equipment that is currently being developed for PBS.

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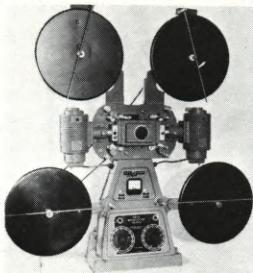


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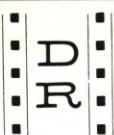


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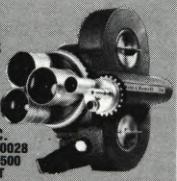
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To date, the development has focused on the use of videotape as the television program origination source because the VTR easily records the caption code in Line 21. However, it is intended that captioning will be compatible with television program material that is recorded on both videotape and film. Consequently, PBS last year solicited proposals for a feasibility study that would analyze the appropriate methods for the closed captioning of filmed program sources.

The Rochester Institute of Technology has conducted a feasibility study to evaluate methods to make caption codes compatible with filmed program sources. And the choice of concept(s) to encode motion picture film and the possibility of future work still rests with both the program director at RIT, Mr. Robert Murray, and PBS.

However, a few months ago, the SMPTE received a proposal for review (by the Society's engineering committee) to consider reserving the area between the film edge and the sound track for use as a data track. It was proposed to study the placement of the SMPTE time code (without drop frame) and specific additional "user" data in this 8-mil width area. The choice of the area outside the sound track was significant. If we observe the area of 16mm film occupied with data, we find little "real estate" remaining.

A working committee was immediately formed by the Society, and that committee, chaired by Michael Strong of Worldwide Films, is currently evaluating this proposal. Tests are being conducted to record and read the SMPTE time code at various data rates: 24 fps, 29.97 fps and 30 fps.

While the success of this approach is by no means assured, it is significant to note that 10 years ago this technique could not have been considered because optical sensors did not have adequate spectral response to effectively read this track.

The intention of those proposing that this data track standard be adopted by the SMPTE is to use the adequately available number of used bits per frame for including captions in the release print.

Of course, for the rest of us who are interested in coming up with a universal time code that would have more utility and hence be more economically viable than the existing EBU time code, the approach of laying down on film the same time code as used on tape, if successful, would be an ideal solution.

The difficulty of the task is not to be underestimated. The high packing density of the SMPTE time code—running from 80 to 100 bits per frame, depending on the frame rate at which the code is recorded—will require very sophisticated

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high-resolution writing and reading techniques. Problems of signal-to-noise and crosstalk with the adjacent optical sound track are yet to be resolved.

If success is achieved, however, then the adoption of a code for which much of the control hardware already exists should result in significant economies in its implementation. Moreover, with the increasing interface between film and tape, use of the same code in both media will greatly simplify all of the post-production processes that involve interaction between the two.

NOTED AND NOTABLE

Continued from Page 905

There are many other bits and pieces of equipment on display that warrant interest, but the aforementioned four items alone, to my way of thinking, have been well worth the trip to London and they will most assuredly have a substantial positive impact on the industry.

That evening Samuelson Film Service Ltd. welcomes a crowd of 300 to its traditional bash at company headquarters in Cricklewood Broadway. Simultaneously, the Rank companies host a dinner cruise on the Thames for visiting delegates.

On the next day, Friday, July 6, the papers program is devoted entirely to laboratory technology.

In the evening the black-tie FILM 79 Banquet that formally winds up the Conference is held in the Grand Ballroom of the London Hilton Hotel. It is a gala event, with Henry VIII and his entourage of jesters, jugglers and troubadours entertaining. But the great hit of the evening is the Royal Artillery Band, with its smart marching choreography and repertoire ranging from "Seventy-six Trombones" to "There'll Always be an England". There will indeed, judging from the tumultuous standing ovation accorded this fine troupe by its appreciative audience.

Then it's all over—with most of the foreign visitors heading for home or extended vacations in Europe. But it has been a magic week, and when the statistics are in it will be found that FILM 79 attracted more than 1,300 registered delegates from over 50 countries—the largest attendance yet.

As for the conduct of the event itself, it could hardly have been more smoothly carried off—a tribute to the many loyal, hard-working folks who did all the chores behind the scenes.

Many people make a point of telling me: "This has been the best yet!"

I would be willing to bet that the verdict is unanimous.

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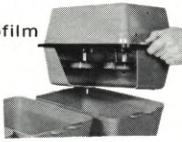
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REPORT FROM FILM 79 Continued from Page 931

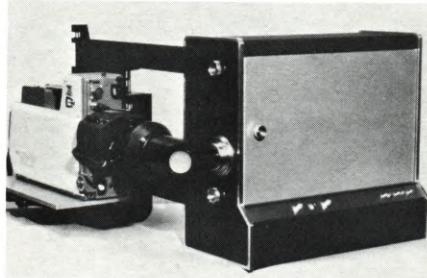
occur while shooting in hazardous conditions, especially when filming in a boat!

The new *raised video monitor* is now positioned mid-way between the STEADICAM camera-mounting platform and the sled-like lower portion. The new design allows the monitor to be tilted up or down and rotated about its axis, so that the operator can find the most convenient viewing position for shooting specific sequences.

For filming special effects, STEADICAM now permits the camera to be rotated a full 360° during the shot. (A special adapter is required for low-angle and tabletop shooting with the camera on the bottom instead of on the top.)

Prices for the new STEADICAM (Universal Model II) start at \$19,500.

For further information, please write to Cinema Products Corp., 2037 Granville Avenue, Los Angeles, CA 90025. Tel: (213) 478-0711 or (213) 477-1971.



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The KM-16 film-to-tape transfer system projects an image from any 16mm film, B&W or color, print or direct reversal film, to any ENG/EFP type video camera for recording on videotape or transmitting by microwave or cable.

The system incorporates the basic capabilities of a large tele-cine chain, with the added benefit of the video camera not being permanently installed in the system. With the KM-16, any station with a standard ENG/EFP type video camera can be assured of broadcast quality tape or transmission from 16mm newsfilm. Newsfilm need not be held up for conversion to videotape because of lack of access to a large tele-cine chain.

Being extremely compact and portable, the KM-16 can also be used to great advantage (in conjunction with a film mini-processing system) where ENG and newsfilm crews are operating in tandem on location—especially in remote areas or under adverse shooting conditions when only newsfilm crews can operate.

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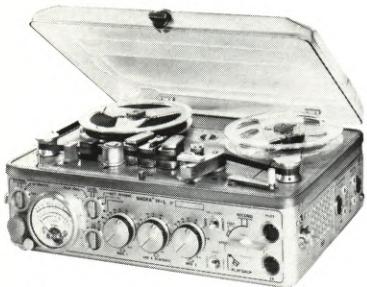
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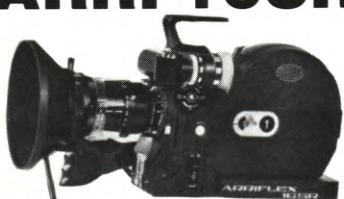
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To avoid delay in getting processed newsfilm back to the station, the KM-16 would be used with an ENG camera to broadcast newsfilm to a local station receiving tower or via satellite worldwide.

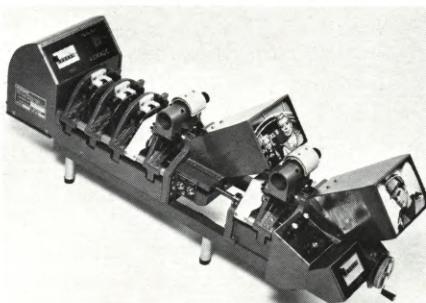
Its low cost and high-quality performance make the KM-16 film-to-tape transfer system especially attractive to small TV stations.

The KM-16 operates by illuminating the image 60 times a second through a condenser system. The magnification is one-to-one, with the image further projected to infinity through a 45° mirror for reversal. The xenon lamp discharge is phase synchronized to the video camera's vertical blanking. This sync pulse also controls the phase relationship of the film pull-down to the lamp discharge.

The film movement is a pin-registered friction pull-down of 50°, well within the safety margin of 72° maximum, insuring high-quality film-to-tape transfer.

With the ENG/EFP camera lens set to infinity, the image is in focus; it can be viewed either on a monitor or the viewfinder of the video camera. By adjusting the focal length of the lens, the image can be adjusted to fill either the viewfinder or the monitor screen.

•



NEW GENERATION EDITING EQUIPMENT

At FILM 79, Acmade International, a leading manufacturer of film equipment, showed a range of products including the new generation editing equipment, consisting of picture synchronizers, with the following features: fully motorised units with instant forward/reverse (rock and roll) movement, instant stop/start unit with facility to disengage the motor for fast hand wind. These picture synchronizers have a large 4 1/2" x 3 3/8" picture and allow for easy access to optics for cleaning.

To complement the Fourway editing machines, for both 16mm and 35mm, Acmade has introduced the Compeditor and the Twin-Pic models.

The Compeditor is available in 16mm and 35mm and is a 5-way, new concept in film editing whereby all editing and track laying is now carried out on the same machine. This unit has an independent

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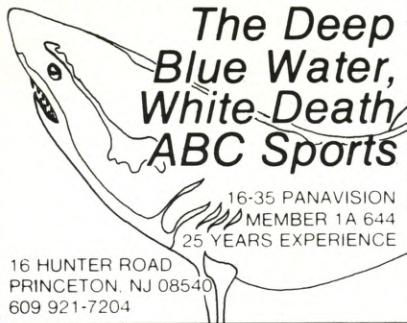
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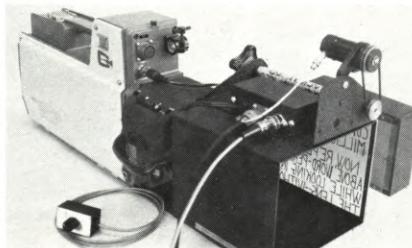
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fourth sound track enabling both searching and synching to be carried out without involving the use of two machines.

The Twin-Pic model is a two picture/three sound track machine for the two camera set-up. In addition, a wide range of cutting room accessories was exhibited.



NEW CP CAMRAPROMPTER AVAILABLE

Cinema Products Corporation introduces a unique new prompting system, the CP CAMRAPROMPTER (patents pending).

Extremely lightweight, easy to mount and simple to operate, the new prompting system utilizes a clear glass set at a 45° angle in front of the video or motion picture camera lens, and is mounted in a matte box-type enclosure.

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A side-mounted light source (or ambient sunlight outdoors) provides the image on the 45°-angled clear glass "mirror." The entire system is operated from a 12-volt battery, and can be readily used on location both indoors and outdoors.

The CP CAMRAPROMPTER weighs under 4 lbs. It is priced at approximately \$1200.

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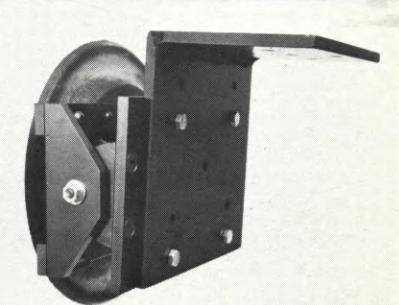
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SEEING IS BELIEVING Continued from Page 943

ing heads, i.e. close-ups. So even though when we visit the cinema we may well be viewing at the same scale as when we watch television, we tend to be seeing rather different sorts of pictures.

However, if we watch a Telecine replay of a typical piece of good quality 16mm film containing some mid and long shots, there is little doubt that, for most people, that film on Telecine does not meet their norm for satisfactory television pictures. Unfortunately, there are too many people in the television industry who will blame "inadequate" film for this. Equally, there are many people in the film industry who will blame the inadequacy of the television system. These attitudes do not help! The real reasons lie elsewhere and rest entirely on the concept that I have tried to develop in this paper. Film which projects satisfactorily does not look the same, or right, over television because it does not satisfy our pre-programmed concept of satisfactory television pictures. So strong is the influence of this prior conditioning that even professionals are unable to reject it, despite the knowledge that a different set of references should be brought to bear. This is why the slight vertical unsteadiness and minor abrasions of projected film go unnoticed in the cinema, but scream out at us when seen on our television screens. They are defects which are not normal for television.

Exactly the same sort of thing happens when television pictures are transferred to film. Such transfers do not make satisfactory film for projection purposes unless they have been "doctored" to look like conventional film. Such doctoring owes nothing to objective matters of resolution or colorimetry. It owes everything to subtle tricks which experts in the transfer field have had to develop by experience, but these tricks cannot always eliminate the head banding and dropouts which we seldom notice when viewing television. So foreign are these picture defects to the film medium, however, that they become immediately and objectionably noticed.

In conclusion then, satisfactory picture quality owes less to absolute factors than to the satisfaction of what we have been programmed to accept as normal. These expectations, or norms, are different for different media and include creative as well as technical aspects. Because of this problems arise when two different media are combined. These problems can only be overcome by so altering the characteristics of the "foreign" medium that it satisfies the subjective norm for the host medium. ■

*Vol. 80, P.801, Oct. 1971

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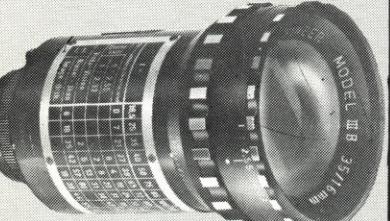
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ENGLISH ACL, 400' & 200' mags, prime lens. 1-NPR w/Perfectone motor, 400' mag & Kinoptic eyepiece. 1-NPR variable speed motor. 1-CP16 R/A, Zeiss 10-100, w/all accessories. 1-25mm Ang. f/0.95 lens. New style French ACLs. Color & B&W TV equipment. Miscellaneous Accessories.

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KEM rentals in Hollywood. HORIZONTAL EDITING STUDIOS (213) 461-4643.

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NAGRAS FOR RENT: Nagra IVs @ \$79 per week, Nagra IIs @ \$54 per week. Call for information about Vegas, Sennheisers and other location sound equipment. SCHARFF COMMUNICATION (914) 769-5087, Daily NYC delivery.

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HI-CONTRAST NEGATIVES or positive title cards to fit your titler or we can shoot 8, 16, 35mm. Sharp, clean, professional, economical. Send for prices and style sheet. COMPUTASET TITLES, P.O. Box 88504, Seattle, WA 98188.

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Call Marvin Stern or Bill Sutphin at Birns & Sawyer, Inc. We need all kinds of motion picture equipment—Nagra III recorders (any condition), lighting (any type), Angenieux zoom lenses, etc. Let us know what you have. We pay top prices. Call (213) 466-8211 or come in. BIRNS & SAWYER, INC., 1026 N. Highland Ave., Hollywood, CA 90038.

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MOTION PICTURE CAMERA TECHNICIAN. Alan Gordon Enterprises, Hollywood, CA is looking for qualified professional camera mechanics for 16mm/35mm equipment. Send resume to Sid Spalding, 1430 N. Cahuenga Blvd., Hollywood, CA 90028.

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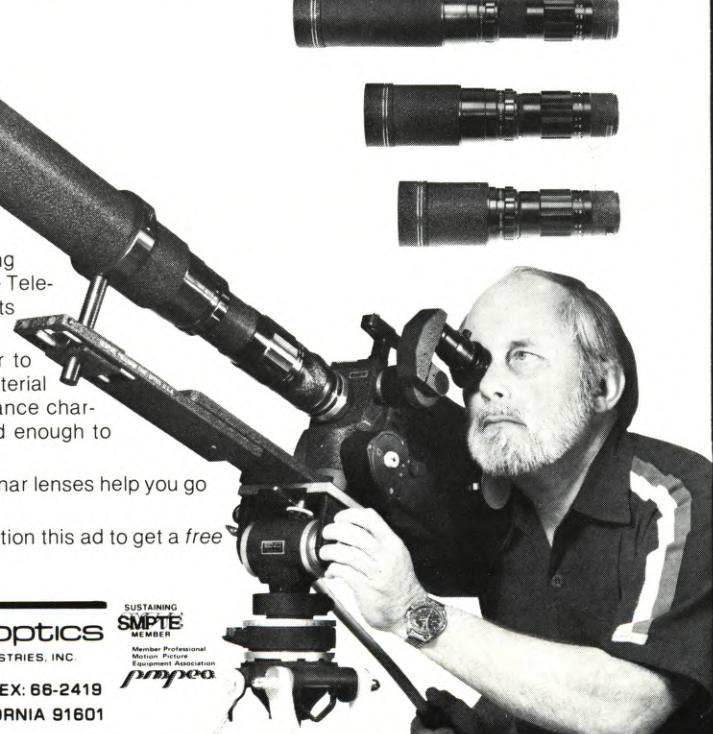
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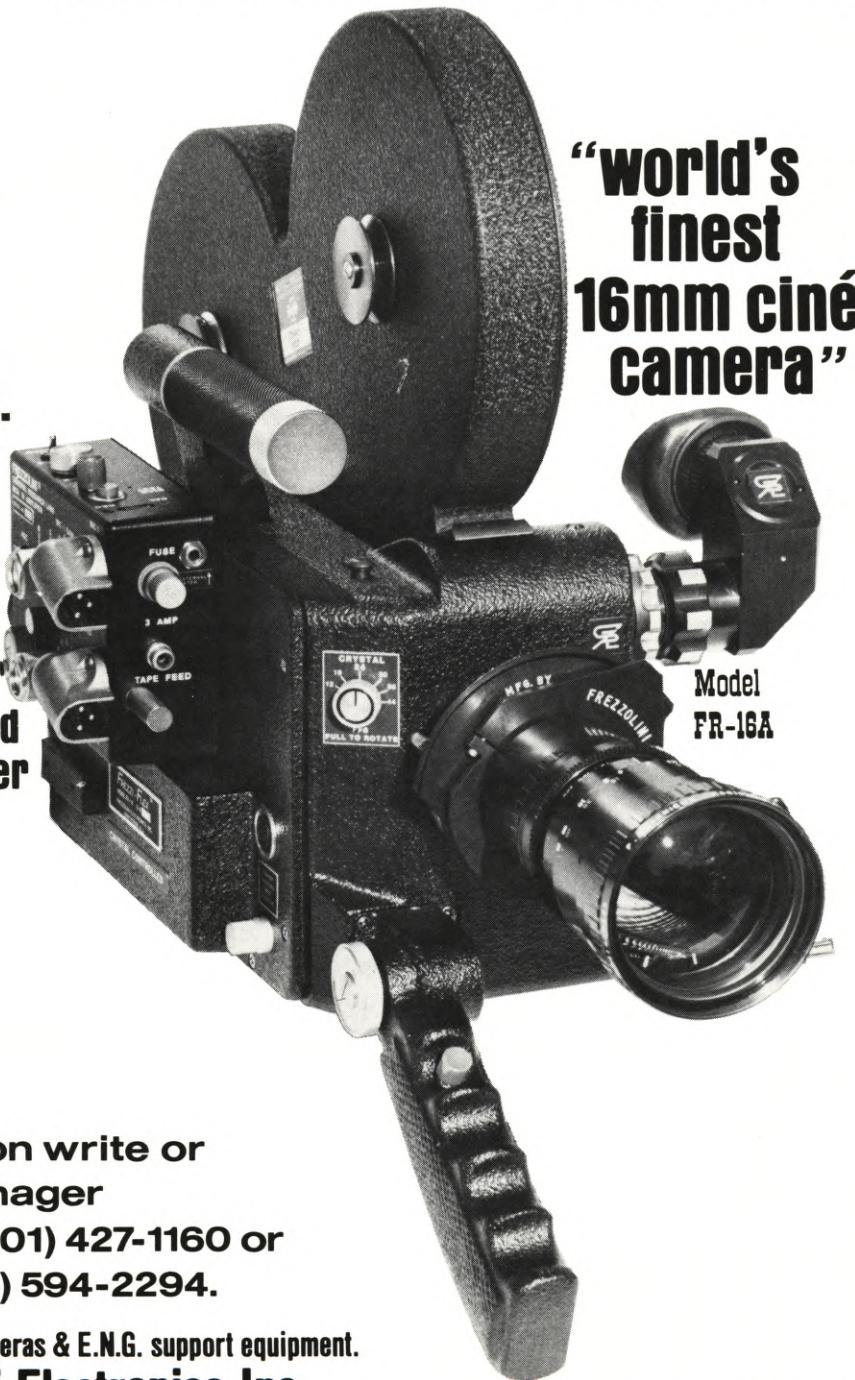
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